

1. Concepts of अगद तन्त्र

Name :- Kiran Kendre

1.1 & 1.2

• Intro -

- one of the branch of अष्टांग आयुर्वेद.

• निरुक्ती -

(अगद) नास्ति गदो यस्य ।

- Antidote to disease or poison.

(तन्त्र) - शास्त्र / विज्ञान / Science.

- The word अगदतन्त्र is derived from 2 words अ + गद -

अ means अच प्रत्यय

गद means गद प्रत्यय

• परिभाषा -

अगदतन्त्र नाम सर्प - - - -

- it is the branch of अष्टाङ्ग deals with the sign & symptoms of विष.

• पर्याय -

- विष चिकित्सा

- दंष्ट्र चिकित्सा

- जांगली

- जाडुलिक

• Scope of अगदतन्त्र -

- It is one of the branch of अष्टांग आयुर्वेद

- 2 main scope of अगदतन्त्र

1) protection of Healthy individual from poison.

2) Managment of individual afflicted with poison.

• Toxicology -

* Intro -

- It is a branch of medical Science.

* Defⁿ -

- Which deals with the poison in relation to their source, action, symptoms, fatal Dose, diagnosis & treatment is known as Toxicology.

* clinical toxicology -

- It deals with causation, diagnosis & managment of poisoning in human.

• विष* निशुक्ती -

- Which causes विषद (fear) is known as विष.

* परिभाषा -

देहं प्रविश्य यद - - - -

- The substance which spread quickly ~~or~~ it enters the body and contaminates the रसादी धातु & causes disease or death.

जगद्विषणं तं दृष्ट्वा - - - -

- The substance which cause Grief to world called विष.

• अमरकोश - विष, गरल, कालकूट

• राजनिघण्टु - दारुद, हरिद्र, नील.

✓ गर

✓ वत्सजाम्ब

✓ गद

✓ अमृत

✓ रस

✓ गरल

• poison.* परिभाषा / Definition -

- Any substance if taken by any route to produce harmful effect on human body is known as poison.

• विष गुण -

रक्षमुष्णं तथा तीक्ष्ण - - - -

- | | |
|-----------|------------|
| • रक्ष | • व्याघायी |
| • उष्ण | • विकृसी |
| • तीक्ष्ण | • विशद |
| • सुक्ष्म | • लघु |
| • आशु | • अविपाकी |

• Differentiate bet मद्य, विष, ओज गुण. -

1) ओज - गुरु शीतं मृदु - - - -

2) विष - रक्षमुष्णं तथा - - - -

3) मद्य - लघुष्णतीक्ष्ण सुक्ष्म - - - -

ओज

विष

मद्य

गुरु

लघु

लघु

स्निग्ध

रक्ष

रक्ष

शीत

तीक्ष्ण

तीक्ष्ण

मृदु

उष्ण

उष्ण

सान्द्र

सुक्ष्म

सुक्ष्म

प्रसाद

आशु

आशु

स्थिर

व्याघायी

व्याघायी

श्लक्ष्ण

विकृसी

विकृसी

पिश्चिल

विशद

विशद

मधुर

अविपाकी

अम्ल

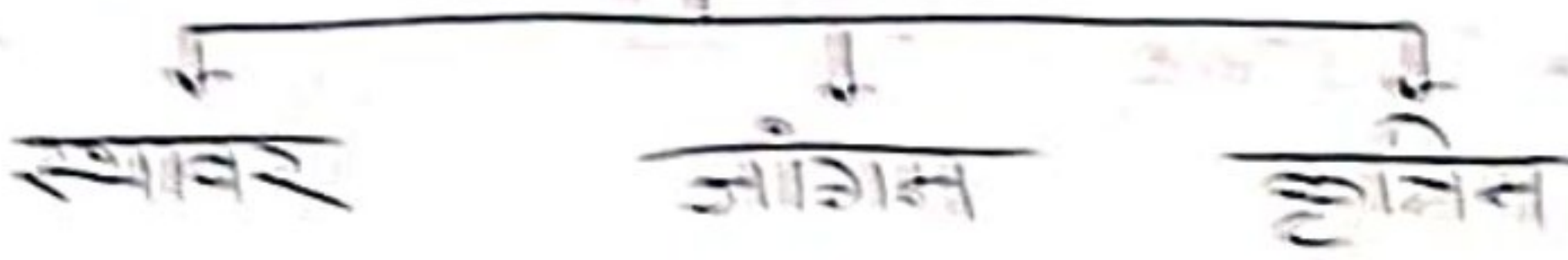
Classification of विष ^(अध्याय 2)

स्थायर विष जैव विविध विषकुलते।
दशअधिष्ठान

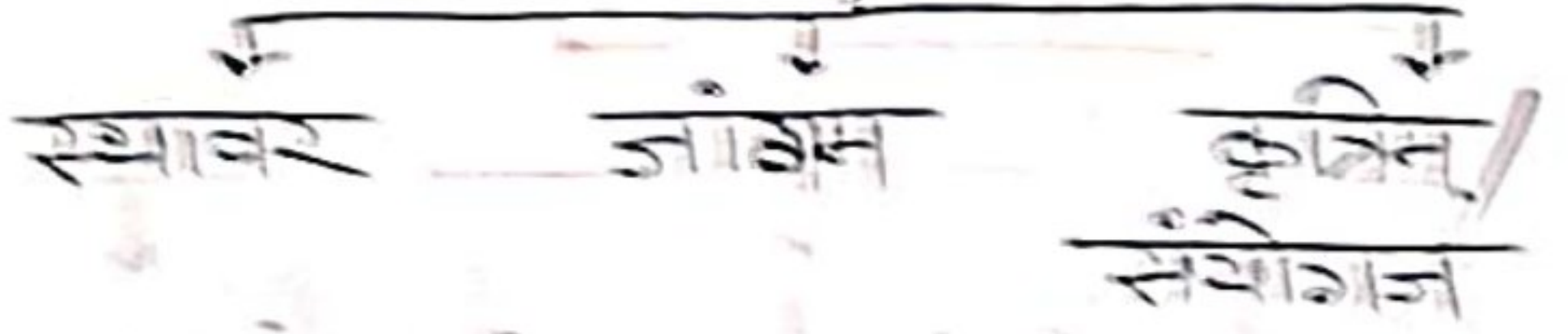
चरक & सुसुत



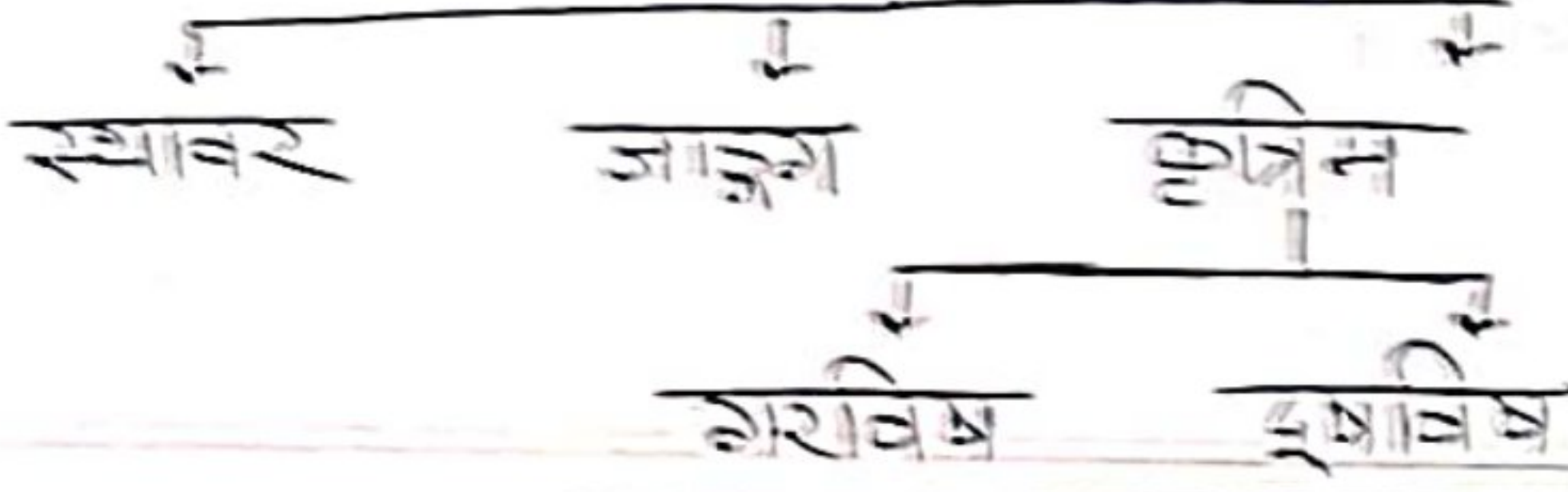
वाग्भट



कारक



भावप्रकार



स्थायर विष अधिष्ठान

सुते मते फल - - -

- मुख (Mouth) 3
- नास (Nose) 5
- कान (Ears) 12
- मुख (Mouth) 5
- त्वेद, सार (Sweat & Urine) 1
- दूध (Milk) 3
- मूत्र (Urine) 2
- शूल (Stool) 15
- निवास (Excretion) 1

जङ्गम विष अधिष्ठान

नास हाशिनो स्वास - - -

- दृष्टि (Sight) 1
- निश्वास (Exhalation) 1
- दंष्ट्रा (Teeth) 1

- नख (Nail)
- मूत्र (Urine)
- पुरिष (Stool)
- शुक्र (Semen)
- लाला (Saliva)
- आतव (menstrual blood)
- मुख (mouth)
- सन्दंश (belchings)
- विशर्घित (Flatus)
- मुण्डास्थि (Beak, Bone)
- शूक (. Bristles/Hairs)
- पित्त (Bile)
- शव (Cadaver)

विष गती

जङ्गम स्वाद अद्योताग - - -

- The movement of
- स्थायर विष - Upward direction
- जङ्गम विष - Downward direction

Classification of poison

(A) on the basis of structure.



Structure

Corrosive Irritant Systemic

①

Corrosive.

Strong Acids Strong Alkalies

Inorganic

- HCl
- H_2SO_4
- HNO_3

Organic

- Carboic acid
- acetic acid
- oxalic acid

- Sodium hydroxide

- Potassium hydroxide

②. Irritant.

Inorganic

Non metal

- phosphorus
- iodine

Metal

- arsenic
- lead

Organic

Animal plant

- Snake
- Scorpion
- Cast
- Calotropis

③

Systemic.

Cerebral poison.

Spinal poison.

Cardiac poison.

1.4

• Toxins -

- a substances. Created by plants & animals that are poisonous to human.

• Poison -

- Enter into the body by Swallowing, inhaling or absorption through the skin.

• Venom -

- Enters the body through bites and stings.

Venom

1) Enters the body through bites & stings

2) it is secreted by fangs or teeth

3) it is introduced into organism through bite or sting

4) Ex - Cobra

Poison

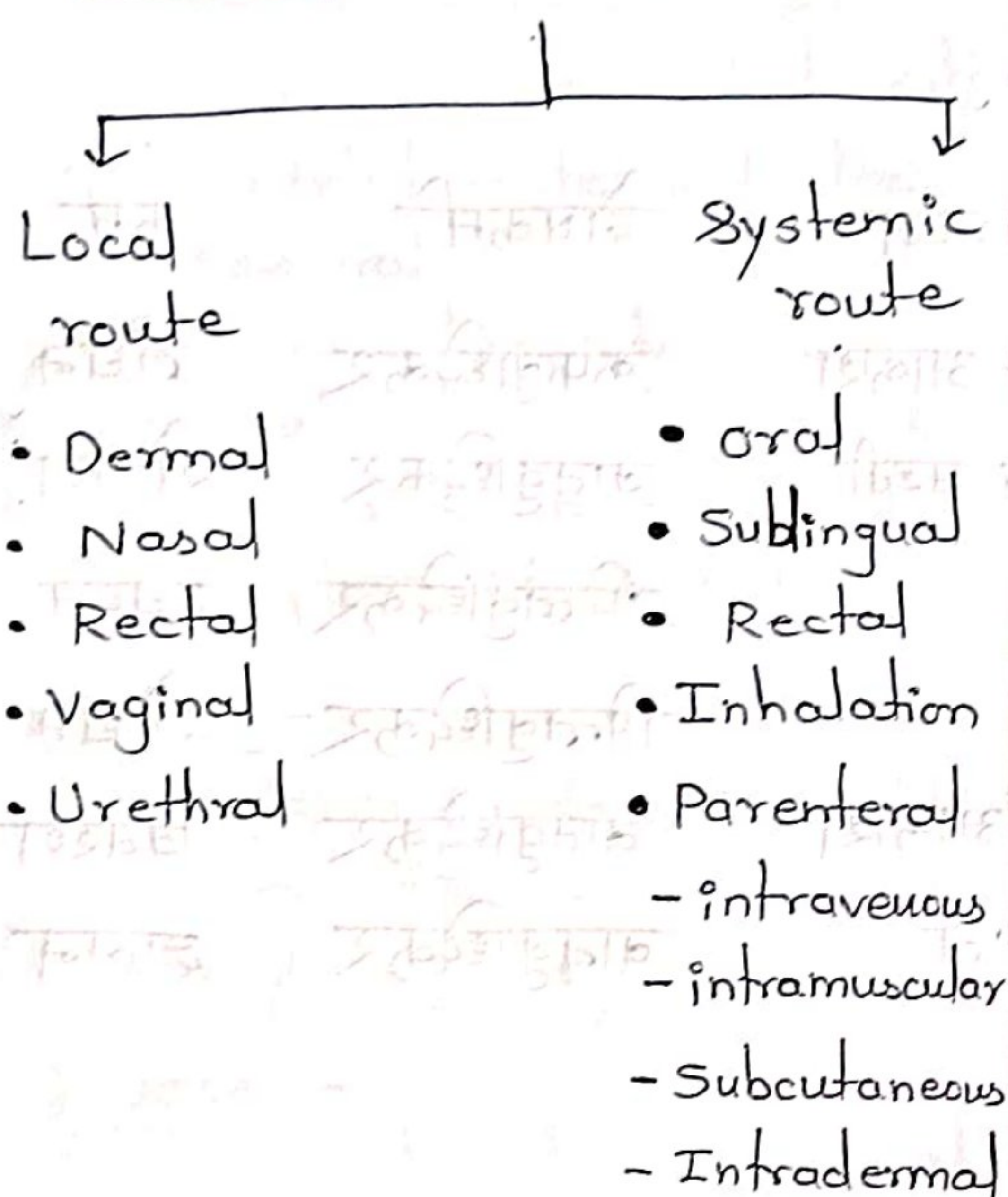
1) Enter into the body by Swallowing, inhaling or absorption through skin.

2) it is secreted by skin.

3) it is secreted as a result of being touched, disturbed or eaten.

4) Ex Dart Frog.

• Route of administration of Poison -



1) Oral - Most commonly used method.

2) Sublingual - Beneath the tongue in mouth & spread over buccal cavity.

3) Rectal - Useful in patients having nausea & vomiting.

4) Inhalation - Poison used in vapourised form absorbed by mucous membrane of Trachea and lungs.

5) Parental -

- Intravenous
- Intramuscular
- Subcutaneous
- Intradermal.

• ADME of Poison -

1) Absorption -

- ability of a poison to enter the blood stream.

- Inhalation
- Ingestion
- Dermal

2) Distribution -

- The process in which a chemical agent translocate throughout the body.

3) Metabolism -

- The process in which the poison modified by organism by Enzymatic reaction.

4) Excretion -

- Toxicants are eliminated from the body by several routes.

- Exhalation.
- Urinary examination
- Fecal examination

1.6

• Mode of action of विष.

* विष गुणानुसार कर्म -

(पंचभौतिकत्व & दोषकर्म)

क्र.	गुण	पंचभौतिक संगठन	दोषकर्म	कर्म
1)	लघु	आग्नि + वायु + आकाश	कफवृद्धिकर	लघन
2)	रुक्ष	आग्नि + वायु + पृथ्वी	वातवृद्धिकर	शोषण
3)	उष्ण	आग्नि	पित्तवृद्धिकर	स्वेदन
4)	तीक्ष्ण	आग्नि	पित्तवृद्धिकर	शोधन
5)	सूक्ष्म	आग्नि + वायु + आकाश	वातवृद्धिकर	विवरण
6)	विशद	Except जल	वातवृद्धिकर	क्षालन

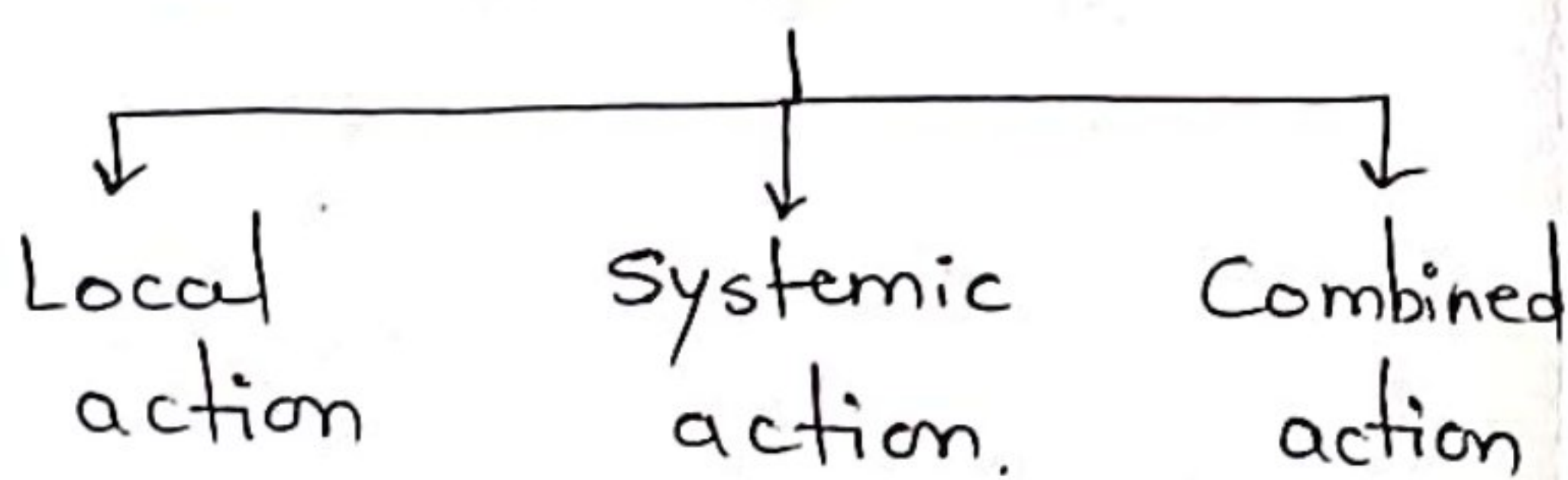
• Mode of action of poison.

* Toxicokinetic.

- It is the study of absorption, distribution, biotransformation & elimination of toxicants.

* Explain. ADME.

* Action of Poison.



ex - H_2SO_4

ex - Aconite

ex - Carbollic acid.

1) Local action

- act at the site of application.

- Ex H_2SO_4 on skin produce chemical burns.

2) Systemic action

- act on specific system

- Ex - Aconite act on heart cause cardiac toxicity & death.

3) Combined action

- act both locally as well systemic.

- Carbollic acid is.

• locally act Corrosive.

• ingested acts as systemic poison.

Factors Modifying the Action of Poison.

- i.e. large dose will produce more rapid and intense poisoning.

1) Route of administration. -

- Gaseous mode fastest working.
- parenteral route is faster than oral.
- intramuscular, intravenous, subcutaneous, Intradermal routes allow most rapid absorption of poison.

2) Age -

- children & older people have more effect as compared to young one.

3) Dose -

- It is directly proportional.

4) Conc of poison -

- It is directly proportional.
- higher Conc more fatality.

5) chemical state of poison -

- pure metallic arsenic & mercury are not poisonous but white arsenic is poisonous.

6) physical state of poison -

- Gaseous poisons are very quickly absorbed and do fast action.

7) Area of application -

- It is directly proportional.
- More the dose, more the effect.

1.8 विष वर्धक भाव. & विष संकुट

* विष वर्धक भाव -

क्षुत्तृष्णा - - - - -

- क्षुत् - Hunger
- तृष्णा - Thirst
- धर्म - Sweating
- दौर्बल्य - Weakness
- क्रोध - Anger
- शोच - Grief
- भय - Fear
- श्रम - Exertion
- अजीर्ण - indigestion
- कर्षिद्रवता - Diarrhoea.
- वृद्धी of पित्त & मारुत
- Smelling of तिल पुष्प & मदन फल

- भु-वाष्प - steam rising from ground.
- घन गर्जित - Thundering of clouds.
- श्रवण of हस्ति, मुषिक & वादित - any musical instruments.
- निः स्वप्ने - lack of sleep.
- विष संकुट - complication of poisoning.
- पुरोवात - easterly winds.
- Smelling of उत्पल (lotus)
- मोदमदन - union of erotic subject. (Sexual desire)

• विष संकुट -

विष प्रकृति - - - - -

Complication of all the factors.

- विषप्रकृति - पित्त
- काल - वर्षा & ग्रीष्म
- अन्न - कटु, तिक्त रस
- दोष - पित्त दोष
- दृष्य - रक्त.

- During the specific time or period & in such condition. one out of the hundred person reaching this stage survives.

1.9

• विष वेग -

धात्वान्तरेषु - - - - -

- The poison is driven by वायु from 1 कुला to another कुला.
- विष crossing over each of the seven कुला.
- Successively situated in the midway region betⁿ 2 धातु's produces different phase of effect.

विष वेगान्तर -

येनान्तरेण

- The interval appearing while poison driven by वायु crosses one कुला to other कुला known as वेगान्तर

• स्थावर विष वेगानुसार लक्षण and चिकित्सा :-

विष वेग	आश्रय	लक्षण	चिकित्सा
1st वेग	रस	• तृष्णा • वमथु • मोह • कलमा • प्रसेक • दन्तर्ष	• अग्निकर्म • वमन • विरेचन
2nd वेग	रक्त	• वैवर्ण्य • जृम्भा • भ्रम • अङ्गुलिमिचिमा • वेपथु • तमकु • मूर्च्छा	• वमन • विरेचन
3rd वेग	मांस	• मण्डल • शोथ • कुण्डू • कोठ	• श्वाशगद
4th वेग	वातादी दोष	• दाह • अङ्गुल • छर्दि • मूर्च्छा	• गोमय रस + गो घृत + मधु + कुपित्थ रस
5th वेग	-	• नील दर्शनि • तमस दर्शनि	• अञ्जन • नश्य
6th वेग	-	• टिक्का	• सैन्धास्थापन • हल्दी + मंजिष्ठा + मरिच + पिप्पली
7th वेग	-	• स्कंध भंग	• Animate poison काकुपद
8th वेग	-	• Death	EXAM GOLD • पलाश बिज, पिल्ल of Peacock

2. विष-चिकित्सा (Management of poison)

2.1

- Diagnosis of poisoning in living & dead.

* Diagnosis of poisoning.

- 1) Acute poisoning
- 2) Subacute poisoning
- 3) Chronic poisoning.
- 4) Severe poisoning.

* Diagnosis of poisoning in living

- 1) By History taking
- 2) Symptoms
- 3) clinical examination
- 4) Laboratory examination

1) By History taking

- Sudden onset of Vomiting/diarrhoea/pain in abdomen
- History of Consumption of Poison or material.
- onset of Symptoms to many person who had taken food together.

2) Symptoms

- Vomiting
- diarrhoea
- Pain in abdomen
- drowsiness

- unconsciousness.
- Breathlessness.
- chest pain

3) Clinical Examination1) General examⁿ -

- specific colour/odour
- Taste.
- Temperature.
- oral manifestation

2) Central Nervous System.

- Patient may in coma

3) Cardiovascular System.

- Pulse
- Blood Pressure

- circulatory collapse
- Vasoconstriction.

4) Respiratory System.

- Dyspnoea
- cough
- Bronchitis.

5) Gastrointestinal System

- Vomiting
- Diarrhoea
- Constipation
- Abdominal pain
- Abdominal distension

6) Genitourinary System

- colour of urine

- Hematuria
- polyuria.

7) Musculoskeletal system.

- smooth muscle depressant

8) Blood manifestations.

- Anemia
- Thrombocytopenia
- Leukopenia
- Hemolysis

9) Ear Manifestations.

- Deafness.
- Vertigo

4) Laboratory Examination

- The presence of poison in blood, urine.

- CBC, LFT, KFT

• Evidence of poisoning in dead.

- In fatal case, evidence of poisoning needs to be approached on following line

1) History (information from inquest report & relatives)

2) clinical record (in case of hospitalised victims)

3) Postmortem findings.

4) Discovery of poison in viscera & in blood.

* Diagnosis of poisoning in dead.

1) Autopsy findings

2) Laboratory examination.

1) Autopsy Examination

- Evidence of soiling of cloth.
- presence of bottle/table in pocket.
- presence of suicide note
- Trickling of poison over skin.
- presence of injuries.
- Smell from body.
- Rigor mortis

- Postmortem lividity.

• Internal Examⁿ in Autopsy

- Cranial cavity
- chest cavity
- Abdominal cavity
- Examination of intestine liver, spleen, kidney, pancreas & oral cavity.

2) Laboratory examination.

- It consists of analysis of viscera, body fluids & blood for poisons.
- Thin layer chromatography
- Gas chromatography
- Liquid chromatography

चतुर्विंशती उपक्रम *

विषोपक्रम as Described by
आचार्य चरक.

- आचार्य चरक describeds 24 method of therapy.
- Treatment is also done based on stages and symptoms.
- 24 specific treatment of poison as follow:-

मन्त्र अरिष्ट उत्कर्तन निष्पीडन चूषण
अग्नि परिषेकाः । अवगाह रक्तमोक्षण
वमन विरेक उपधानानि ॥
हृद्यावरण अञ्जन नस्य घूम लेह औषध
प्रशमनानि । प्रतिसारणं प्रतिविषं
संज्ञासंस्थापनं लेपः ॥ मृतसञ्जीवनम्
एकच विंशतिरेते चतुर्भिश्चिकाः ।

- 1) मन्त्र - chanting मंत्राऽ.
- 2) अरिष्ट बन्धन - Application of Tourniquet
- 3) उत्कर्तन - Small incisions at bite site.
- 4) निष्पीडन - Squeezing of blood.
- 5) चूषण - Sucking of Venom by mouth
- 6) अग्नि - Cauterization of bite part
- 7) परिषेक - Sprinkling over the water
- 8) अवगाह - Complete bath
- 9) रक्तमोक्षण - blood letting.
- 10) वमन - Emesis
- 11) विरेचन - Purgation
- 12) उपाधान - Medication upon incised Head
- 13) हृद्यावरण - Protection of heart
- 14) अञ्जन - Collyrium.

- 15) नस्य - Nasal medication.
- 16) घूम - Inhalation of medicated fum
- 17) लेह - Licking of Medication
- 18) औषध - Medicine
- 19) प्रशमन - Pacifying medication.
- 20) प्रतिसारण - Rubbing of medicated powder
- 21) प्रतिविष - Use of Antidote
- 22) संज्ञासंस्थापन - Resuscitation.
- 23) लेप - Appli. of medicated paste.
- 24) मृत सञ्जीवन - Method of reviving

① मन्त्र

- Superior most line of Treatment for removal of poison.
- Hymns - full of Tejas
- chanted by person who indulge always in Truth and spiritual knowledge.
- Eliminate poison very quickly from body.

② अरिष्ट बन्धन

- emergency line of Treatment of विष.
- अरिष्ट → Complications which are indicative of death.

Types - i) अरिष्ट tied with chanting of मन्त्र.

ii) अरिष्ट tied without chanting of मन्त्र with rope / others materials.

Materials → रज्जु

Cotton Thread

Leather band

Inner bark of Tree

Procedure → 4 अंगुली's above site of bite so spread is arrested.

Precautions → i) Neither very tight nor very loose.

ii) If Tight, produce bad smell, swell.

iii) If loose, won't prevent spread.

② उल्क र्त्तन

defⁿ - Excision / अक्षरण of दंष्ट्र स्थान from शरीर.

Procedure - 1. Poison remains for 100 मात्राकाल at site of bite.

2. Then it spread to blood and other tissue.

3. Within this period, site of bite must be excised to minimize its spread.

Contraindication - Contraindicated in सभी स्थान

Use - Effect of poison doesn't spread as soon as its site is excised.

④ निष्पीडन

defⁿ - The procedure of removal of poison from bite site by squeezing called निष्पीडन.

- done after अरिष्ट वक्ष्यन

- Toxicity of poison will not develop if the sprang are removed, just as sprout is lost when seed destroyed.

⑤ चूषण

- sucking of विष from दंष्ट्र स्थान
- poison should be sucked with the help of mouth filled with flour of barley / dust.

⑥ आग्नि कर्म

- दाहन कर्म is done to treat poison located in skin and flesh.

⑦ परिष्के

- परिष्के with जीतल वीर्य द्रव्या's
- As per मुचुत → done with drugs like चन्दन and अशीर

वाञ्छित → done after रक्तमोक्षण

चक्र → with help of प्रवेष्ट and मेष with drugs जीत वीर्य

⑧ अवगाह

- The procedure involves immersion of affected part in medicated decoction / oil.

⑨ रक्तमोक्षण

- Eliminates poison from Blood.
- Best remedy for poison that has entered the Blood.

Contraindication → Infant
pregnant women
old man.

10) वमन

- first line of Treatment for ingested poison.
- By ingesting poison → कफ aggravates → fainting and intoxications → mitigates कफ → made to vomit using strong emetics.

11) विरेचन

- Indicated in 2nd stage of poisoning
- drugs like:-
 - a) दन्ती, निलीफल consumed with milk/mastu.
 - b) fine powder of कुष्ठ with decoction of त्रिफल
 - c) powder of त्रिवृत, सुश्म and निलिनी with milk.

procedure -

- a) person should lie on cot having hole for voiding faeces.
- b) After वमन, विरेचन, patient should drink विषनाशक जवाभु.

12) उपाधान चिकित्सा

- procedure where विष is taken out from the मस्तिष्क by applying medicaments.

13) हृदयवरोध

- procedure of protection of Heart from adverse effect of poison using certain medicaments.
- substances use for हृदयवरोध →
 - curds
 - marrow of animals
 - fresh juice of cowdung
 - solution of गोशिक

14) अञ्जन

- अञ्जन is done when there is obstruction to eyes.

Medicaments → चन्दन, मधुक, उत्पल, जैश्व, macerated with Bile is best अञ्जन for poison.

अञ्जन used in विष चिकित्सा -

- शरुडाञ्जन
- चूर्णाञ्जन
- कचदी अञ्जन
- सुर्यादी अञ्जन

15) नश्च

- When poison is present in nasal, head region, नश्च is done.

Medicaments → paste of वर्तक, विजापूर, ज्योतिष्मति.

16) धूम

- process of administration of medicated smoke
- use → Helps to clear of all blocked channels.
→ stabilizes respiratory system.

- धूमगद → Unique comb.

- Indication → वृश्चिक दंष्ट्र चिकित्सा

17) अवलेह

- लेह्य is form of medicine which is most palatable.

(18) औषध

- Involves use of several antitoxic remedies in diff. condn. of poisoning.
- औषध भोगा'ड → मृतसंजीवनियोग
धूमागद
क्षारागद
अमृतधृत
अजितागद

(19) प्रशमन

- Little amount of poison may remain un-eliminated for in body and to remove such poison प्रशमन is done.

(20) प्रतिशरण

- means प्रवर्धन
- Indicated in case Blood fails to come out of site bite during शक्तमोक्षण

(21) प्रतिविष

- प्रतिविष involves use of विष द्रव्य to nullify the effect of another विष.

(22) संज्ञास्थापन

- procedure followed to receive conscious person.

(23) लेप

- The entire body together with place of bite should be smeared often with paste of antipoisonous drugs.

(24) मृतसंजीवन

- Just as अमृत gives life to dead, so does मृतसंजीवन in all cases of विष.

General principles of management of poisoning

- 1) Supportive Care.
- 2) Removal of Unabsorbed Poison
- 3) Use of antidotes.

1) Supportive Care -

ABCD

- A - Airway
- B - Breathing
- C - Circulation maintenance
- D - Disability management

a) Airway protection -

- The most common factor contributing to death in

- In case of poisoning, hypotension occurs.
- So, Vasopressor drug (dopamine) should be given through IV infusion.

d) Disability Management

- i) Treatment of seizures
- ii) Prevention of 2° complications
- iii) Dialysis.

2) Removal of Unabsorbed Poison -

- Contact - ingested.
- inhaled
- Injected

poisoning is airway obstruction,
Mouth to mouth
CPR

b) Breathing - (Oxygenation)

- Oxygenation is necessary in effective management of poisoning.

- Ventilation should be provided to the patient
- Take patient away from crowd.
- cloth of the patient should be loosened.

c) Circulation -

- It is used to give medicine & fluid directly into circulation (vein).

a) Contact poison -

- Wash with clean water
- Use antidotes.

b) Inhaled Poison -

- give Fresh air and clear airway.

c) Injected poison -

- apply tourniquet
- Multiple incision & Suction

d) Ingested poison -

- emesis
- purgation
- Gastric lavage
- Activated charcoal

EXAM GOLD

3) Use of antidotes. -

- The substance which Neutralize the effect of poison. without causing harm to the body.

Types -

- 1) physical/Mechanical antidote.
- 2) chemical antidotes.
- 3) physiological antidotes.
- 4) Universal antidotes.
- 5) chelating agent.

1) physical antidote -

- i) Bulky food particles.
- By blocking the action
e.g. Banana.

ii) Demulcents -

e.g. milk, Butter.

iii) Activated charcoal - - absorb the poisons.

2) chemical antidotes. -

- potassium permagnate (oxidizing agent)
- citric acid, Lemon juice in crossive alkali poisoning

3) physiological antidotes -

Antidote used in

- Atropine - Organophosphorus poisoning
- Ethanol - Methyl alcohol poisoning.

4) Universal antidotes.

• Composition of.

Powdered charcoal + Magnesium oxide + Tannic acid
(2 part) (1 part) (2 part)

5) chelating agent.

- BAL (British Anti Lewisite)
- EDTA (Ethylenediamine tetracetic acid)
- penicillamine (cu poisoning)

Duties of Medical officer in case of suspected poisoning.

- In less facility hospital, first aid measure should be given to poisoned patient & refer to higher medical centre.
- The attending medical officer should collect and preserve evidences suggestive of poisoning.
- Every case of poisoning should be reported to police in gov. hospital.

- If death of patient occur then police has to be informed.
- All collected evidences should be handed over to Investigating police officer in properly sealed condition.
- Record declaration of serious & conscious poisoned patient
- if police requires information regarding poisoning case, doctor should give all information.
- death of food poisoning cases the Public health Authorities must be notified.
- Preservation of record necessary for 3 yr.

* Removal of Unabsorbed poison *

• point Add -

1) Gastric lavage -

- Indication - Conscious patient
 - Within 1-2 hr after ingestion of poison.

- Procedure - Lateral position of patient
 - ↓
 - using ryle's tube
 - ↓
 - Insert into mouth:
 - ↓
 - use mouth gag.
 - ↓
 - Confirm position of tube in stomach
 - ↓
 - Lavage is carried out with saline/water
 - ↓
 - until clear fluid.

• Contraindication -

- unconscious patient.
- Hypothermia.

2) Activated charcoal -

- it is tasteless, black fine powder
- due to its large surface area, it adsorbs the poison in stomach

- Dose - 1-2 gm/kg of body weight
 - + mixed with water.
 - + Administered to patient.

• Disadvantage -

- unpleasant taste.
- provokes vomiting
- causes diarrhoea.

• Contraindication -

- Intestinal obstruction
- perforation of stomach.

4.

गरविष & दुषविष

Date / /
Page No.

★ गरविष ★

• निरुक्ती -

गरः - गृ धातु
अचू प्रत्यय

- गर means to dilute generally the liquid forms.

• परिभाषा -

गरसंयोगजं चान्यद् गरसञ्ज्ञं गदप्रदम् ।
कालान्तरं विपाकित्वञ्चान्न तदाशु हरन्त्यसूनु ॥

(च.चि 23/14)

- गर is a Combination of स्यावर & जङ्गम विष.

- it taken long time to digest.

- It exerts toxic effects after interval of life therefore does not kill the patient immediately.

(च.चि 23/14) चरकसंहिता सूत्रेण ①

• गरविष प्रयोग -

सौभाग्यार्थं स्त्रियः स्वेद रजो नानाङ्गजान् मलान् ।
शत्रुप्रयुक्तांश्च गरान् प्रयच्छन्त्यन्नमिश्रितान् ॥

(च.चि 23/233)

- To gain favour from their husband, women serve food mixed with their sweat, (स्वेद) menstrual blood or different types of (शरीरमल) excreta of the body.
- To destroy the enemies (शत्रु) गरविष is administered along with food.

• लक्षण -

- पाण्डू - Anaemia
- कृश - Emaciation
- कास - Cough
- श्वास - Breathlessness
- ज्वर - Fever
- महा उदर - Abdominal enlargement
- महा यकृत - Hepatomegaly
- महा प्लीहा - Splenomegaly

• चिकित्सा -

Acc. to आचार्य चरक

① निदान परिवर्जन (Assessing the patient)

- Before starting the treatment, the physician should examine & should ask as to what, when & with whom he has eaten.

(हृदय हृदय निदान)

② वमन and हृदय शोधन -

- After obtaining the information, the patient should instantaneously by given वमन.
- वमन with ताम्र चूर्ण mix with honey which also cures हृदय शोधन.

③ हृमप्राशन -

- When the heart is cleansed, the patient should be given 1 शाण (4 gm) of स्वर्ण भस्म (gold powder)

④ अगदपान -

✓ नागदंत्यादी घृत -

- Buffalo-ghee cooked with नागदन्ती, त्रिवृत, दन्ती, द्रवन्ती, स्नुहि क्षीर, मदन फल along with 1 आङ्क of गोमूत्र.
- it is useful in curing patients suffering from सर्प, कीट, गरविष.

✓ मुवद्दी अगद

- पारवतादि हिम
- शंकर सुवर्णादी योग.

★ दूषीविष ★

दुष धातु + णिच् प्रत्यय.

- निरुक्ती - 'कालान्तरं प्रकोपि विषं दूषीविषम्।'

- The poison which gets aggravated after a long stay in body is called as दूषीविष.

- परिभाषा -

'यत् स्थावरं जङ्गमं कृत्रिमं वा देहादशेषं यदनिर्गतिं तत् ।'

- It may be either स्थावर, जङ्गम or कृत्रिम विष.
- it is not fully eliminated from the body.
- It reduced by anti poisonous remedies
- Stay in the body for long period
- vitiating it slowly.
- it is called as दूषी विष.

- प्रकोप काल -

कोपं च शीतानिलदुर्दिनेषु यात्याशु, --- ।

- it gets aggravated on a cloudy day & by exposure to cold & wind.

• पुर्वरूप - निद्रा गुरुत्वं च विजृम्भणं च विश्लेष हर्ष अथवा अङ्गमर्दः।

- निद्रा - Sleepiness
- गुरुत्व - heaviness
- जृम्भा - yawning
- विश्लेष - looseness in the joints.
- हर्ष - Horripilation
- अङ्गमर्द - Body ache.

• लक्षण -

- Diarrhea (अतिसार)
- Discolouration of skin (वेवर्ण्य)
- Bad odour from the body.
- Anorexia (अरुचि)
- Thirst (तृष्णा)
- Fainting (मूर्च्छा)
- Vomiting (छर्दी)

• स्थानानुसार दूषीविष लक्षण -

- Stomach (आमाशय) - कुफवात रोग
- Intestine (पक्वाशय) - वातपित्त रोग
- loss of hairs
- strength appears like a bird which has lost its wings.
- other धातुज रोग.

दूषीविष
लक्षण

तेनादितो भिन्नपुरीषवर्णो विगन्धवैरस्यमुखः पिपासी।

मूर्च्छन् वमन् गद्गद वाक्विषण्णो भवेच्च दूष्योऽदरलिङ्गजुष्ट

आमाशयस्ये कुफवातरोगी पक्वाशयस्ये अनिलपित्त रोगी।

☆ दुषीविषातं सुखिन्नम् उर्ध्वं च अधश्च शोधितम्
पाययेत् अगदं नित्यमिमं दूषिविषापटम् ॥

• चिकित्सा -

- स्वेदन
- उर्ध्वं अधः शोधन
- अगदपान
- रक्तमोक्षण (blood letting)
- पंचकर्मा

• अगदपान -

* दुषविषारी अगद -

पिप्पल्यो द्यामकं मांसी लोध्रं एला सुवर्चिका
कुटन्नं नतं कुष्ठं यक्षी चन्दनं गैरिकम् ॥
दूषविषारी : नाम्नाडयं च अन्यत्रापि वायते ॥
नाम्ना

- | | |
|---------------|-------------|
| • पिप्पली | • सुवर्चिका |
| • पिप्पली मूल | • कुटन्नं |
| • द्यामक | • नतं |
| • मांसी | • कुष्ठ |
| • लोध्र | • यक्षी |
| • एला | • चन्दन |
| | • गैरिक |

This combination is called as दुषविषारी अ

- it Consumed with मधु.

* दुषीविष *

निदान -

षितं देशकाल अन्नदिवास्वप्ने अभिष्णाशः।
स्माद दूषयते घातू तस्माद दूषीविषं स्मृतम् ॥

- it becomes vitiated. by

देश - Habitat

काल - Season

अन्न - Food

दिवास्वप्न - day-sleep.

• it vitiates the घातू.

• it is called as दुषीविष.

उपद्रव -

• ज्वर

• टिक्का

• मूर्च्छा

• अनाह

• शुक्र क्षय

• शोफ

• रूक्षोग

• उन्माद

• दाह.

• साध्य असाध्यता -

• साध्य - Disease produced by weak poisons is curable quickly in person who are self controlled.

• याप्य - Those which are persisting for more than one year.

• असाध्य - person who are emaciated and who indulge in unsuitable food & activities.

* 5th chapter *

* विष उपद्रव -

विषवेगान्मद मूर्च्छा विषाद हृदयद्रवः प्रवर्तन्ते।

- मद - Intoxication
- मूर्च्छा - Fainting
- विषाद - Depression
- हृदयद्रव - palpitation.

- | | | |
|----------|-------------|---------------|
| • ज्वर | • मूर्च्छा | • शिरशूल |
| • टिक्का | • अतिसार | • शक्नु |
| • कास | • विबन्ध | • पूतिदंश |
| • श्वास | • अनाह | • शक्तस्त्राव |
| • वमथु | • बास्तिशूल | • विषवात |
| • तृष्णा | | |

• चिकित्सा -

3 factors determine the toxicity

- 1) chemical structure.
- 2) How much body can absorb.
- 3) The body's ability to detoxify and eliminate the subs.

• Symptoms :-

- | | |
|-------------|-----------------|
| • Nausea | • Stomach pain |
| • Vomitting | • Weakness |
| • Diarrhea | • Seizures |
| • Dizziness | • Coma. |
| | • Heart problem |

• Treatment -

- Stomach wash / Gastric leavage
- Activated charcoal
- Antidote.

* Drug induced toxicity -

- In pharmacology, drug toxicity occurs when a person has a accumulated too much of a prescription drug in their bloodstream, leads to -ve effect.

• Drug toxicity

- generally occurs over time
- it is Accidental typically.

• Drug overdose

- happens when too much of a substance is consumed at once.
- either accidental or intentional.

• Causes -

- over ingestion of medicine.
- due to an adverse drug Rx?
- Age, kidney func & hydration can affect.

Occupational Hazard.

* Hazard

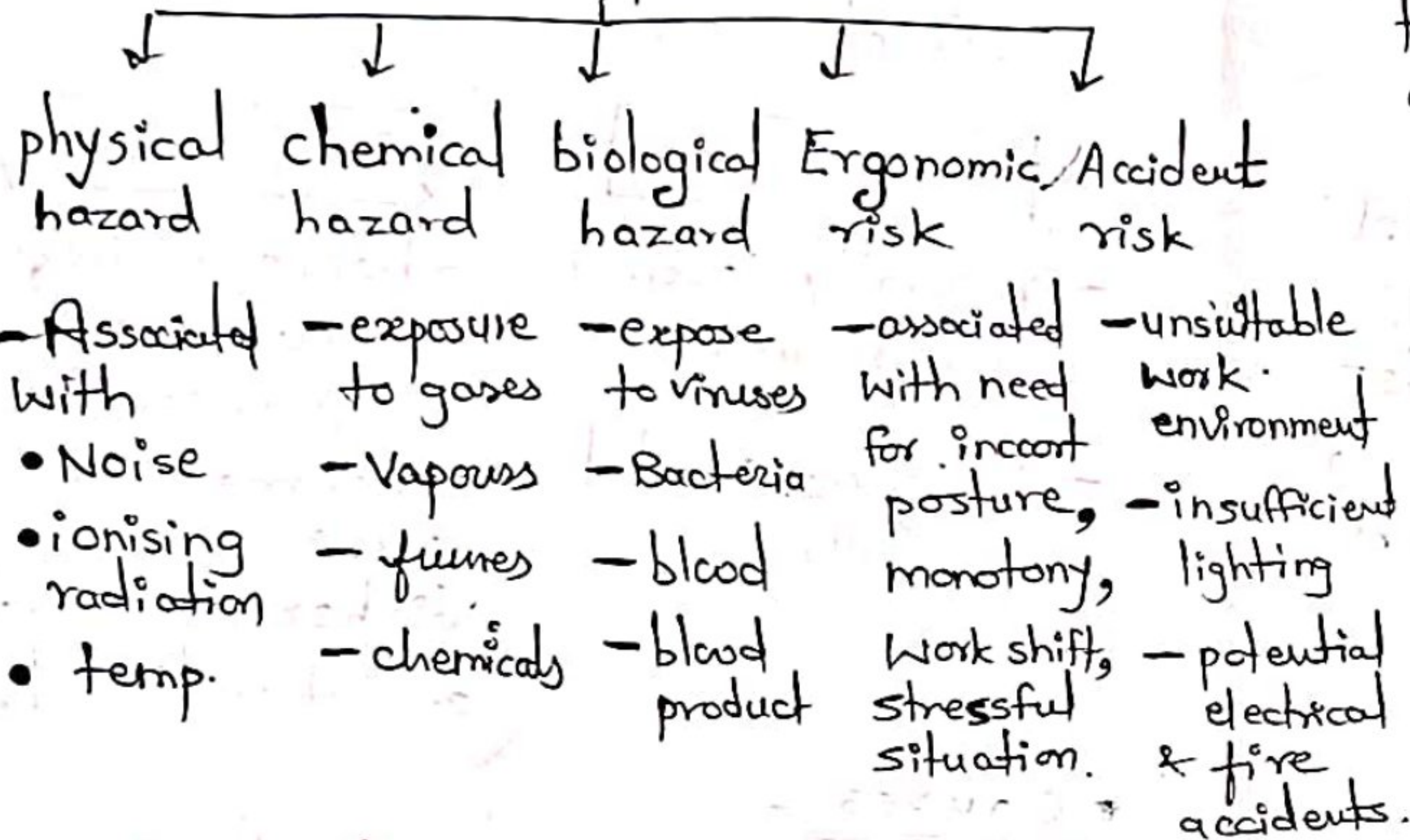
• Defⁿ - A hazard is anything that has the potential to cause harm, damage.

adverse effect to people, property or environment.

- Any illness associated with a specific occupation or industry is referred to as an occupational disease.
- Such disease caused by variety of biological, physical, chemical & psychological factor. that existing the workplace.

- Occupational hazards are risks associated with working in specific occupations.
- Occupational Safety & Health Administration (OSHA)

5 types.



2) 2° prev - aim to raise awareness & detect symptoms early in order to reduce to impact of a disease or injury via education or screening program.

3) 3° prev - focuses on minimising the harm & impact of an illness or injury by treatment.

* Examples. -

1) Mechanical Hazard

- abrasion } ex. of injury.
- contusion.
- cuts.

2) Psychosocial Hazard

- Lack of job satisfaction
- insecurity.
- work pressure.

physiological or behavioural changes

- anxiety
- depression
- alcoholism.

* Prevention. -

① 1° prev - most effective beca it focuses on preventing disease or injury before it occur

Allergic Manifestation

- Allergies occurs when immune system react to a foreign subs. such as pollen, bee venom.

• Symptoms -

- Hay fever also called as allergic rhinitis can cause.

- Sneezing.
- Runny nose
- watery, red or swollen eyes.
- itching of nose, eyes, mouth.

A food allergy can cause

- Tingling in the mouth
- Swelling of lips, tongue, face or throat.
- Anaphylaxis common in all.

An insect stinging allergy can cause

- itching all over the body.

• large area of swelling at the sting site.

• cough, chest tightness, shortness of breath.

A drug allergy can cause.

- Rash
- wheezing
- Itchy skin.
- facial swelling

* Anaphylaxis.

- life threatening medical emergency, it can causes to go into shock.

• Symptoms. -

- loss of consciousness
- drop in BP.
- shortness of Breath
- skin rash.
- Nausea
- Vomiting

OK

Introduction -

- The study of pollutants and their action on environment constitutes environmental toxicity.

Defination -

- It is defined as the Science that deals with harmful effect of pollutant on environment & wild life which includes air, soil, water.

i) विषक्त वायु / Air pollution -

- Ayurvedic classics explained the concept of pollution.

- The enemies of ruler may poison the water, road, smoke & atmosphere of their country.

• दुषीत वायु लक्षण -

- if धुम & वायु is afflicted with विष, birds suffer from श्रम & fall on the ground.

- it also causes attack of

• Cough (कास)

• Catarrh (प्रतिश्याय)

• headache (शिरोरुज)

• Severe eye disease (नयनामय)

• चिकित्सा -

To purify the धूम & वायु following drugs are burnt in ground,

- लाक्षा

- अभय

- हरिद्रा

- रेणुका

- अतिविष

- रत्ना

- कुष्ठ

- वक्र

- प्रियाङ्गु

* Air pollution -

- Air pollutant is material in air that have adverse effects on human & ecosystem.

- The substance are solid particles, liquid droplets or gases.

- Human activity & Natural processes can generate the air pollution.

• Causes -

- Burning Fossil Fuels.

- Exhaust from factories & industries

- Vehicles & factory emission.

• Components -

- CO_2 (Carbon dioxide)

- SO_2 (Sulphur dioxide)

- NO_2 (Nitrogen dioxide)

- CO (carbon monoxide)
- CFCs (chlorofluorocarbons)
- NH_3 (Ammonia)
- Radioactive pollutants.
- Acid rain - Nitrogen & Sulphur oxide.

• Health effects. -

- Respiratory infection

- Lung disease:

- incre. risk of asthma & COPD (chronic obstructive pulmonary disease)

• Also Causes lung Cancer.

- Cardiovascular disease.

- it emerge the risk of stroke & heart diseases.

- Cancer

- incr. risk of lung Cancer, Cervical Cancer & brain Cancer.

- Mortality.

- Acc. to WHO, every year air pollution causes 7 million people worldwide.

- CNS

- it affects short term memory, learning ability, develop disorder.

ii) विषक्त जल / Water pollution.

• दुषित जल लक्षण -

- poisoned water becomes पिच्छिल (slimy),
Strong smelling (उग्रगंधी), frothy
(फेन).

Marked with black coloured lines
on surface.

- Fishes living in water dies.

- Bird & beasts are roam in Confusion
(भ्रम).

- Men & animals Causes.

- Vomiting

- Fainting

- Fever

- Burning Sensation

- Swelling in limbs

• चिकित्सा -

- following drugs should burn't &
should smeared / add in water
of their मसम.

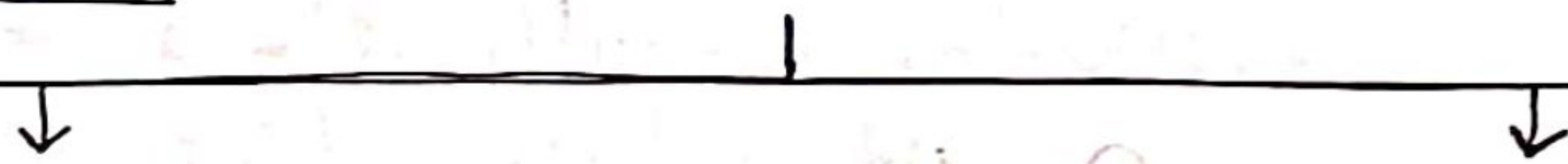
- The drugs are.

• द्यवा, अश्वकुर्ण, असन, परिभद्र, पाटला,
• सिद्धक, मोक्षक, राजद्रुम & सोमवल्क

*• Water pollution - To deteriorate the

- It is the Contamination of water bodies usually due to human activities
- Water pollution is leading world wide cause of death & disease.

- Sources - Nitrogen 70 contribution -



Natural Man-made

- Eutrophication by leaching minerals.
- industrial waste contains metal salts.
- putrefaction.
- Radioactive waste
- Agriculture pollutant
- Eutrophication
- Floating plastic debris.

- Health effects. -

- Viral hepatitis.
- Typhoid
- Cholera
- Amoebiasis
- round worm
- Thread worm

• characteristics of water pollution -

- Excessive abnormality in Smell, Colour, taste & touch.
- Excessive Stickiness.
- Absence of birds that move around water.
- reduction of aquatic animals.

iii) विषक्त भूमि / Soil pollution -

• उषित देश लक्षण -

- When men, ox, horse, Camels & elephant comes in contact with poisoned land they will suffer from.

• Swelling (शुलका)

• दाह

• falling of hair, nails & affected part of body.

• चिकित्सा -

- अम्ल or सर्पिगन्धा dissolved in wine & sprinkled on ground.
- irrigation should done with water mixed with decoction of विडङ्ग, कटभी, पाथ

*• Land pollution -
- Land pollution means degradation of earth's surface & soil due to human activities.

• Sources -

- Deforestation
- Agricultural activities
- industrialization
- Nuclear waste
- Sewage treatment
- disposal of waste

• Health effects -

- Filariasis
- Hepatitis
- Encephalitis
- Asthma
- Food poisoning
- Diarrhoea

(NK)

* Effect of biological, chemical & Nuclear Warfare :-

➤ Biological Warfare :-

- Biological Warfare is the use of biological agent or toxins to harm or kill humans, animals or plants as a weapon of war.
- It is also known as germ warfare
- Some biological agents that can be used as weapon are anthrax & plague

• History of biological warfare -

- plague infected bodies thrown into black sea port by Mongol forces.
- British forces gave smallpox infected blankets to native Americans during French & indian war.

• Effects on Health -

- Loss of life - Cause death of humans, animals & plants.
- Disease - It can spread rapidly & cause illness.
- Economic damage - it can cause economic loss by infecting livestock etc.

- Environmental damage - Causes extinction of endangered species.
- public fear - Creates fear among the public.

2) Chemical warfare -
- It involves toxic properties of chemical substances as a weapon

- Sources -
 - Industrial accident
 - military operations
 - War
 - Mustards gas used in world war I

- History -
 - Accidental release of methylisocyanate in Bhopal.
 - chemical weapons 1st used when German military released chlorine gas.

• Health effects -

- Blood agents - chemical prevent person's blood & tissue.
- choking agents - abnormal absorbed through lungs & leads to death.
- Blister agent - burns mucous-membrane skin, eyes & causes large blister.

effects:

↓ ↓
Acute poisoning Symptoms life threatening symptoms
↓ ↓

- | | |
|----------------|-------------------|
| - Headache | - Vomiting |
| - Nausea | - Diarrhoea |
| - Sweating | - Convulsion |
| - Anxiety | - Tremors |
| - Restlessness | - Resp. paralysis |

iii)

Nuclear warfare -

- It is use of Nuclear Warfare weapon is used to inflict damage on enemy.
- It has long term negative effects.

e.g. Russia - Ukraine war.

• History -

- Uses atomic bombs on 2 Japanese cities Hiroshima & Nagasaki in 1945.
- 1 lakh people were burned within a min.

• Harmful effect -

- Malignancy.

- damage on reproductive cells.

- genetic defect

NK

* Ecotoxicology & Biomagnification - 4

• Intro -

- The term ecotoxicology was introduced for the study of environmental toxicity caused by both natural & artificial.

- It deals with interactions, transformation, fate & effects of Natural & Synthetic chemical in biosphere.

• Defn -

Ecotoxicology is a branch of Science which studies the presence of adverse effects of chemicals in animal & plants.

• Natural process of intoxication -

- large number of toxic chemicals produced by plants, fungi & animal.
- acts like soil leaching, Volcanic eruptions & anthropogenic inputs.

• Biomagnification -

- Biomagnification can be defined as the rise or increase in contaminated substances caused by intoxicating environment.

(DK)

* - Toxicovigilance. - *

- It is the active process of identifying & evaluating toxic risks existing in a Community.

- Evaluates the measures taken to reduce them.

- It involves analysis of poison centre to identify the poisoning

• Use of toxicovigilance in laboratory -

- Identify poisoning Cases

- Collect & analyze data relating to poisoning, process, evaluate, communicate public for preventive actions.

- Natural process of intoxication -

- large number of toxic chemicals

- produced by plants & animals

- acts like soil leaching & Volatile

- anthropogenic inputs

• Biomagnification -

- Biomagnification can be defined as

- the rise in increase in concentration of

substances caused by intoxicating

environment.

7.1 of Visha (Poisons)

7.1 of Visha (Poisons)

- Defⁿ = (Contact dermatitis).

- it is acute or chronic skin inflammation.
- Usually caused by exposure to a chemical, physical or biological agent.
- It includes:
 - irritant dermatitis
 - Allergic contact dermatitis.

- Usually caused by exposure to a chemical, physical or biological agent.

- It includes:

- irritant dermatitis
- Allergic contact dermatitis.

- Allergic contact dermatitis.

- clinical features of C.D.:-

- skin irritation.

- Rash

- Burn.

- itching

- Ulceration.

① irritant dermatitis. -

• Defⁿ -

- it is caused by chemical sub. that directly irritate the skin.

- Symptoms -

- Redness
- itching
- pain
- ulceration.

- itching
- ulceration.

- Treatment

- Removal of irritant by washing.

steroid cream - 0.5% hydrocortisone may help

7. alleviate pain & itching

- Exposure to irritant is prevented.

- Ex - pesticides - organophosphate sulfur.

② Allergic dermatitis. -

- Defⁿ - Skin become sensitized by exposure to the chemical & Result is localized allergic Rxn.

- Symptoms -

- Redness
- itching
- Small blisters to widespread blisters.

- Small blisters to widespread blisters.

- Treatment -

- Washing to remove allergen.
- Treatment to reduce the itching, pain & swelling.
- Use Corticosteroid cream to reduce the symptoms.

- Treatment to reduce the itching, pain & swelling.

- Use Corticosteroid cream to reduce the symptoms.

- Ex - pesticides - Cresol
Formaldehyde

③ photosensitization Derm.

2 types

contact
phototoxic
photosensitization

Photoallergic Reaction.

- Symptoms -

- Redness
 - itching
 - pain
 - blisters.
- initiate process
- clothing & sunscreen lotion may be helpful.

- itching ~~legs~~ - clothing &

- pain Sunscreen

- blisters. - lotion may be helpful

EXAM GOLD

7.2 Sign Symptoms & Management

① अभ्यंग विष -

• Sign & Symptoms -

- स्फोट - eruption
- रज - pain
- स्राव - exudation
- त्वकुपात्र - ulcer of skin
- स्वेदन - more of sweat
- ज्वर - fever
- दारण मांस - tearing of muscles

• चिकित्सा -

- शीताम्बु - pouring cold water on body.
- Applying the paste of चन्दन, उशीर, कुष्ठ, तगर, सोमवल्ली with juice of गोमूत्र

② लेप विष -

• Sign & Symptoms -

- Use of poisoned cosmetic give rise to
- Black Coloured of face (श्याव)
- Thorny eruptions like those found in पद्मीनी कण्ठ (lotus flower)

• चिकित्सा -

- क्षौद्र घृत पान
- लेप of चन्दन, मधुक & पुनर्नवा added with ghee.

③ पादुका विष -

• Sign & Symptoms -

- Wearing of poisonous shoes occur.

- शोफ - swelling
- स्राव - exudation
- स्वाप पाद - loss of sensation
- स्फोट - eruption

④ आभरण विष -

• Sign & Symptoms

- lose their brightness
- Burning sensation
- inflammation
- Ulceration

- Treatment - Same as अभ्यंग विष

⑤ वस्त्र विष -

7.3

1) Dermatological manifestation due to chemical, cosmetics, occupations.

chemicals
 ↓
 Absorbed through skin.
 ↓
 enter into blood stream
 ↓
 causing toxic effect.

• Sign & Symp. -

- patches - small patches

• prevention -

- Use of protective clothing

- Use of safe handling & applicatⁿ procedure.

• Ex - pesticides & organic

• Management -

- Stop using product.

- Take anti histamine to reduce inflammation.

- Apply corticosteroid cream to reduce inflammation.

7.4

उषीविष

- Type of artificial poison
vitiate शोणित.

- Affect each one of दोष & causes death in patient.

- Due to repeated improper/
excessive exposure to affected
place, time, food, practice of improper sleep.

2) other allergens.

• cosmetic products =
soap, lotions, face &
eye makeup.

other allergies = pollen and
food allergies.

Allergen.

↓
Trigger immune system

↓
Releases antibodies.

↓
That result in allergy Symp.

• Symptoms -

- Urticaria

- itchy skin

- rash

• Diagnosis - patch test.

• Symptoms -

- Acne & pimples

- Eczema

- Rashes

- Psoriasis

- itching

- Urticaria

- Dermatitis

गरविष

• Allergic Rxn. - includes
itching, redness.

• Contact dermatitis

• Eczema

• Skin Rashes

• Acne & boils.

• photosensitivity.

EXAM GOLD

7.5

Dermatological manifestation
due to bites & stings.

- When venom of सर्प, कीट,
rats, lizards, scorpions,
dogs etc. Comes into
contact with the skin.

• Symptoms -

- दाह - burning sensation
- शोथ - Swelling
- कण्डू - itching
- तोद - pain
- त्वक विवर्ण - skin discolouration

8.

Therapeutic Utility of अगद योग.

8.1

दुषविषारी अगद

पिप्पल्यो ध्यामकुं मांसी लोघ्र एला सुवर्चिका ।
 कुटन्नटं नतं कुष्ठं यष्टी चन्दनं गैरिकम् ॥
 दुषविषारीः नामाड्यं न च अन्यत्रापि वार्यते ।

(अ. ह. उ. 35/39-40)

Contents :

• पिप्पली

• ध्यामकु

• मांसी

• लोघ्र

• एला

• सुवर्चिका

• कुटन्नट

• नत

• कुष्ठ

• यष्टी

• चन्दन

• गैरिक

8.2

बिल्वादी अगद

बिल्वस्य मूलं सुरसस्य पुष्पं फलं कुरञ्जस्य नतं सुरहम् ।
 फलत्रिकं व्योषनिशाब्दयं च वस्तस्य मुत्रेण सुसूक्ष्मपिष्टम् ।
 भुजङ्गलूतोन्दुरवृश्चिका धैविसूचिका जीर्णरिज्वरैश्च ।
 आतन्निशान् भूतविधर्षितांश्च स्वस्थीकरोत्यञ्जनपाननस्यै ॥

(अ. ह. उ. 36/84-85)

Contents :

- बिल्व
- सुरस (तुलसी)
- कुरञ्ज
- अनन्त (तांगार)
- सुराहम (देवदारु)
- हरितकी
- बिभितकी
- आमलकी
- शुण्ठी
- मरिच
- पिप्पली
- हरिद्रा
- दारुहरिद्रा
- वस्तीमुत्र

8.3

वचा हिंगु विडंगानि सैन्धवं गजपिप्पली ॥
पाठा प्रतिविषा व्योषं कुशयेन विनिर्मितम् ॥
दशाङ्गमगद पीत्वा सर्वकीटविष जयेत ॥

Contents :

- वचा
- हिंगु
- विडङ्ग
- सैन्धव
- गजपिप्पली
- पाठा
- प्रतिविषा
- शुण्ठी
- मरिच
- पिप्पली

} व्योष

8.4

मूर्वादि अगद

मूर्वा अमृता नत कुणा पटोली चव्य चित्रकान् ।
व्यामुस्त विडङ्गनि तक्रकोष्णाम्बुमस्तुभिः ।
पिबेद्रसेन चाम्लेन गरोपहतपावकः ॥

(अ. सं. 3. 40/120)

• Content -

- | | |
|------------------|-------------|
| • मूर्वा | • चव्य |
| • अमृता (गुडूची) | • चित्रक |
| • नत - (तगर) | • व्यामुस्त |
| • कुणा | • मुस्ता |
| • पटोली | • विडङ्ग |

8.5

पञ्चशिरिष फलमूल त्वक्पुष्पपत्रैः समेधृतैः श्रेष्ठः ।
पञ्चशिरिषोऽयं विषाणां प्रवरो वधे ।

(च. चि 23/218)

• Content -

- फल of शिरिष
- मूल of शिरिष
- त्वक् of शिरिष
- पुष्प of शिरिष
- पत्र of शिरिष

8.6

विषन्ध महाकुषाय

हरिद्रामाज्जिष्ठा सुवहासूक्ष्मेला पालिन्दी चन्दन कुतक
शिशिषसिन्धुवार श्लेष्मातका इति दिशेमानि विषन्धानि
भवन्ति, इति षट् महाकुषायवर्गः ॥

(अष्टाहोपायगण १६) (अ. सू. ४/११)

• Contents -

- | | |
|--------------|--------------|
| • हरिद्रा | • चन्दन |
| • माज्जिष्ठा | • कुतक |
| • सुवहा | • शिशिष |
| • सूक्ष्मेला | • सिन्धुवार |
| • पालिन्दी | • श्लेष्मातक |

(अष्टाहोपायगण १६) (अ. सू. ४/११)

8.7

एकसर गण

सोमराजीफलं पुष्पं कटुभी तूसेन्धुवारकः ।
चोरको वरुणाः कुष्ठं सर्पगन्धाः सप्तला ॥
पुनर्नवा शिशिषस्य पुष्पमारुवधार्कजम् ।
श्यामाडम्बवृक्षा विडङ्गानि तथाडम्राश्मन्तकानि च ॥
भूमी कुरवकुश्चेव गण एकसरः स्मृतः ।
एकुशो द्वित्रिशो वाऽपि प्रयोक्तव्यो विषापहः ॥

(अ. सू. ५/८४-८६)

Contents -

- सोमराजी फल, पुष्प (बाकुची)
- कुष्मी
- सिन्धुवारक (श्वेतपुष्पा निर्गुण्डी)
- चोरक (ग्रान्थिपर्णानुकारी)
- वरुण
- कुष्ठ
- सर्पगन्धा (नाकुली)
- सप्तला (यवतिक्ताभेद) रूद्रा
- पुनर्नवी
- शिरीषस्थ पुष्प
- आरुवंध
- अर्क
- श्यामा (श्यामलता, प्रियङ्गु)
- अम्बष्ठा पाठा
- विडङ्ग
- आम्र
- अश्मन्तक
- भूमी
- कुरबक

9.

स्थायर विषDate / /
Page No.Poisons of Plant Origin

9.1

Cardiac poison1. वत्सनाभ

- Type of Poison - Cardiac poison
- Botanical Name - Aconitum Ferox
- Family - Ranunculaceae
- Vernacular Name
 - Hindi - मिला विष
 - English - Monk's hood.
- Synonyms -

• वत्सनाभ	G
• अमृता	A
• विष	V
• गरल	
- Toxic part - All parts are poisonous, Mainly roots.
- Habit -
 - it is a small tuberous-rooted, perennial herb reaching 1 m tall
 - * growing in himalayan region.

- Habitat - On the Alpine Himalayas & Alpine Nepal.

- रस पञ्चक -

- रस - मधुर
- गुण - रूक्ष, लघु, तीक्ष्ण
- वीर्य - उष्ण
- विपाक - कटु

- Toxic chemical Constituent -

- Aconitine
- Pseudo aconitine
- Aconine
- Picroaconitine

- ✓ Action - Cardiac

- Sign & Symptoms -

- Sweetish taste
- Nausea
- Vomiting
- Salivation
- Hypotension
- Chest pain
- Irregular pulse
- Vertigo
- AV block

- Fatal Dose - * 1-2 gm of root
2-5 mg of pure aconitine.
- Fatal period - 2-6 hrs.
- Management -
 - Stomach Wash
 - Activated charcoal
 - Atropine -
- Post-mortem Appearance -
 - Fragments of root in stomach.
 - Inflamed mucous membrane of stomach & small intestine.
 - Necrosis of the myocardium.
- Medico-legal Importance -
 - Homicidal poison
 - Accidental poison
 - Cattle poison
- औषध योग -
 - आनन्द भैरवि रस
 - सञ्जीवनि वटी
 - त्रिभुवनकिर्ती रस
 - विंगुलेश्वर रस
- Therapeutic Dose -
 - 1/16 - 1/8 रत्ति (50-125 mg)

2. करवीर

- Type of poison - Cardiac poison
- Botanical Name - Nerium Odorum
- Family - Apocynaceae
- Vernacular Name -
 - Hindi - कुनेर
 - English - Oleander
- Synonyms -
 - करवीर
 - अश्वमारकः
 - अश्वमोहकः
 - कुणवीरः
- Toxic part - All parts, specially seeds, stem and Root (more toxic)
- रसपञ्चक -
 - रस - कटु, तिक्त
 - गुण - लघु, रुक्ष, तीक्ष्ण
 - वीर्य - उष्ण
 - विपाक - कटु

- Habitat - - Extensively cultivated all over India
- Toxic chemical constituent -
 - Oleandroside
 - Nerioside
 - Folinerin
- Action - Cardiac
- Sign & Symptoms -
 - Headache
 - dizziness
 - Respiratory difficulty
 - Nausea
 - diarrhoea
 - BP falls
- Fatal dose - 5-15 leaves
* 15-20 gm of root.
- Fatal period - 24 hrs.
- Management -
 - Stomach wash.
 - Atropine.
 - Symptomatic treatment.
 - Maintenance of BP.
 - Electrolyte balance.

• Post Mortem Appearance -

- Signs of GIT irritation
- Congestion of Various organ.
- Haemolysis of RBC

• Medico legal Importance -

- Suicidal poison
- Accidental poison
- Cattle poison

• औषध योग -

- कुशवीराद्य तैल
- कासीसादि तैल

• Therapeutic Dose - 30-125 mg per day

- Root powder can be administered upto 30-125 mg without any toxic effect.

3. - Tobacco

- Type of poison - Cardiac poison
- Botanical Name - Nicotiana tabacum
- Family - Solanaceae
- Vernacular Name -
 - Hindi - तंबाकू
 - English - Tobacco
- Synonyms -
 - ताम्रपत्र
- Habitat -
 - Cultivated in tropical of India, originally native plant of America.
- Toxic part - leaf (Leaves)
- रसपञ्चक
 - रस - कटु, तिक्त
 - गुण - लघु, रूक्ष
 - वीर्य - उष्ण
 - विपाक - कटु

- Toxic chemical constituent -

- Nicotine
- Nor nicotine

- Action - Cardiac

- Sign & Symptoms -

- Nausea
- Vomiting
- Abdominal pain
- Dizziness
- Hypertension
- Headaches
- Irregular breathing
- Diarrhoea

- Fatal Dose -

- Nicotine - 60-100 mg (40-60 mg)
- Tobacco - 15-30 gm

- Fatal period -

- 5-15 min.

- Management -

- Stomach wash.
- Activated charcoal
- Antidote
- Artificial Respiration
- Symptomatic treatment
- Atropine

- Post Mortem Appearance -
 - Sign of Asphyxia
 - Congestion of GIT
 - Congestion of brain, lungs & liver.
- Medicolegal Aspects -
 - Accidental.
- Therapeutic Dose = 1 to 2 gm. -

4. Cerbera Odallam

- Type of poison - Cardiac poison
- Botanical Name - Cerbera odallam
- Family - Apocynaceae
- Toxic part - ~~seeds~~ fruit
- Habit -
 - Leaves dark green, fleshy, long.
- Toxic chemical Constituent :
 - Cerberin
 - Cerberoside
 - Odollin
 - Thevetin
- Action - Cardiac
- Sign & Symptoms -
 - GIT irritation & Cardiac toxicity.
 - Nausea
 - Vomiting
 - abdominal pain
 - diarrhea
 - irregular respiration.

- Fatal dose - kernel of 1 fruit
- Fatal period - 2-4 days. (1-2 days)
- Management -
 - Stomach wash
 - Atropine
 - Maintenance of BP.
 - Maintenance of Cardiac output.
- Post mortem Appearances -
 - Congestion of eyes.
 - Congestion of lungs.
 - Signs of GIT irritation
- Medico legal Importance -
 - Suicidal poison
 - Accidental poison
 - Homicidal poison
- Therapeutic Dose : - used as external application.
- Formulations : - used as insecticide, pesticide & Antifungal agent.

* Toxic part - Leaves.

* family - Scrophulariaceae.

5. Digitalis

• Type of poison - Cardiac poison.

• Botanical Name - Digitalis purpurea.

• Toxic chemical Constituent -

• Digitoxin

• Digoxin

• Digitalin

• Digitonin

• Action - Cardiac

• Sign & Symptom -

• Nausea • Diarrhoea

• Vomiting • Weakness

• anorexia

• depression

• photophobia

• Fatal dose -

• 15-30 mg of digitalin.

• 4 mg of digitoxin.

• Fatal period -

• 6-24 hr.

- Synonyms - तिल पुष्पी, Fox glove, lady's glove.

• Management -

- Stomach wash
- purgatives
- Atropine

• Post mortem Appearance -

- Not specific.

• Medico legal Importance -

- Accidental.

• Therapeutic Dose - leaf powder - 500 mg. alcoholic extract - 5-15 mg.

• formulation -

- जातीफलादी चूर्ण.
- त्रिलोक्य विजय वटी.

9.2

Neurotoxic Poisons

1. कुपीलु

(Neurotoxic Poison)

- Type of poison - Spinal poison
- Botanical Name - Strychnos Nuxvomica
- Family - Loganiaceae
- Vernacular Name -
 - Hindi - कुचल
 - English - Poison nut tree.
- पर्याय -
 - कुपीलु
 - तिन्दुक
 - काकतिन्दुक
 - विष तिन्दुक
- Toxic part - Seeds & bark
- Habit -
 - It is medium sized tree with dark or grey Coloured wood.
- Habitat -
 - Distributed all over India.

• रसपञ्चक -

- रस - तिक्त, कटु
- गुण - रुक्ष, लघु, तीक्ष्ण
- वीर्य - उष्ण
- विपाक - कटु

• Toxic chemical Constituent -

• Strychnine

• Brucine

• Loganine

• Action - Spinal

• Sign & Symptoms -

- Convulsions
- Stiffness
- Risus sardonius
- breathlessness
- lock jaw
- dilated pupil

• Fatal dose -

- 1-2 Crushed seeds
- 50-100 mg of Strychnine

• Fatal period -

- 1-2 hours

(गुण रस) तिक्त कटु - ५५

• Management -

- Control of Convulsion.
- Stomach wash with KMnO_4 .
- Activated charcoal.
- Symptomatic treatment

• Post mortem Appearances. -

- Rigor mortis appears early.
- Signs of asphyxia.
- Mucous membrane of duodenum.
- Lungs are Congested.

• Medico - legal importance -

- Homicide.
- Suicide.
- Accidental.

• औषध योग -

- लक्ष्मीविलास रस
- विषनिन्दुक वटी
- अग्नितुण्डि रस

• Therapeutic dose -

- $\frac{1}{4}$ - 1 गुग्गा (125 mg)

2. अहिफेन

- Type of Poison - (Neurotoxic Poison) Narcotic Poison.
- Botanical Name - Papavera Somniferum
- Family - Papaveraceae.
- Vernacular Names -
 - English - Opium
 - Hindi - Aphim
- Synonyms -
 - खसफलाक्षीर
 - अहिफेनम्
 - तिलभेद
 - खसतिल
- Toxic part - Latex
- Habit - (Herb) = 60-120 cm height
 • Erect rarely branched annual herb growing upto 60-120 cm height.
- Habitat -
 - Largely Cultivated as a Cold weather crop, chiefly in the eastern parts of Country.

• रसपञ्चक -

- रस - तिक्त-कषाय
- गुण - सुक्ष्म, रक्ष
- वीर्य - उष्ण
- विपाक - कटु

• Toxic chemical constituent -

- Papaverine
- Morphine
- Narcotine

• Action - CNS Depressants.

• Sign & Symptoms -

- Erythemia.
- itching.
- Headache.
- Nausea.
- Constricted pupil.
- Flaccid & relaxed muscles.

• Management -

- Stomach Wash.
- Activated charcoal.
- Antidote

• Fatal Dose -

- ~~Opium~~ - 2 gm
- ~~Morphine~~ - 0.2 gm
- Codeine - 0.5 gm
- Pethidine - 2 gm

• Fatal period -

- 6-12 Hr.

• post mortem Appearance -

• Sign of Asphyxia

- Post mortem staining is well marked & Cyanotic.
- Face and Nails are Cyanosed.
- Trachea and bronchi are Congested.

• Medico legal Appearance -

- Suicidal.
- Accidental

• औषध योग -

- अहिफेनासव
- जातिफलादि वटि
- महावातराज रस

• Therapeutic dose -

- $\frac{1}{4}$ - 1 रत्ति

3. धतुर

- Type of poison — (Neurotoxic poison)
Deliriant poison
- Botanical Name — *Datura ~~metel~~ Linn.*
Stramonium
- Family — *Solanaceae*
- Vernacular Names —
 - Hindi — धतुर
 - English — Thorn apple.
- Synonyms —
 - धतुर
 - किनव
 - कुनकु
 - मदन
- Toxic part — Seed. & flowers.
- Habit — (Shrub)
 - Small shrub growing 4-5 feet high.
- Habitat —
 - Common in tropic parts of India and temperate part of Himalaya.

• रस पञ्चक -

- रस - तिक्त, कटु
- गुण - लघु, रक्ष
- वीर्य - उष्ण
- विपाक - कटु

• Toxic chemical Constituent -

- Hyoscyine
- Hyoscyamine
- Atropine

• Sign & Symptoms -

- Bitter taste
- dryness of mouth
- Difficulty in swallowing
- Burning sensation in stomach
- dilated pupils

• Fatal dose -

- 100-125 seeds
- 60 mg alkaloid

• Fatal period -

- 24 Hrs. - (2 Hr)

• 1/2 seed - 1/2 - 1/2 - 1/2 - 1/2

• 1/2 seed - 1/2 - 1/2 - 1/2 - 1/2

• Management -

- Emetics.
- Stomach wash.
- purgative.
- Activated charcoal

• Post mortem Appearances -

- Signs of Asphyxia.
- Fragments of seeds may found in stomach and intestine.
- inflammation in GIT.

• Medico legal importance -

- Suicidal poison.
 - Stupefying (Road poison).
 - Abortifacient.
- Accidental
Homicidal

• औषध योग -

- धतुर् तैल
- कुनकुसुम
- महाकुनकु तैल

• Therapeutic Dose -

- बीज चूर्ण - $\frac{1}{4}$ - $\frac{1}{2}$ गुञ्जा.
- पत्र चूर्ण - $\frac{1}{2}$ - $1\frac{1}{2}$ गुञ्जा.

4. ... भिड़

- Type of poison — (Neurotoxic poison)
Deliriant poison.
- Botanical Name — Cannabis sativa.
- Family — Cannabaceae.
- Vernacular Name —
 - Hindi — भिड़
 - (CHT) English — Indian hemp.
- Synonyms —
 - भिड़
 - बुटी
 - भिंगा
 - मादिनी
- Toxic part — (Leaves)
 - All parts of the plant except stem, root and seeds of Cannabis.
- Habit — (Herb)
 - Tall annual herb, found in hilly areas.
- Habitat —
 - Grows all over India.

- रसपञ्चक -

- रस - तिक्त
- गुण - लघु
- वीर्य - उष्ण
- विपाक - कटु

- Toxic chemical constituents -

- Cannabinol.
- Tetrahydrocannabinol (THC)

- Sign & Symptoms -

- Euphoria.
- Irrelevant
- Increased appetite & thirst.
- Nausea
- dizziness.

- Fatal Dose -

- चरस - 2 gm / kg body weight
- गन्जा - 8 gm / kg
- भाङ्ग - 10 gm / kg

- Fatal period -

- 12 Hr

• Management - 9. Further I

- Artificial respiration.
- Stomach wash.
- Emetics.

• Post mortem Appearances - 10. Further I

• characteristics of asphyxia.
(Signs.)

• Medico-legal Importance - 11. Further I

- Accidental
- Stupefying
- Homicidal.
- Suicidal.

• औषध योग - 12. Further I

- मदनोदय मोक्ष
- जातिफलदि चूर्ण

• Therapeutic dose - 13. Further I

- 2-4 रत्ति. (125-250 mg)

9.3

Irritant Poisons

1. जायपाल

- Type of poison - Irritant poison
- Botanical Name - Croton tiglium
- Family - Euphorbiaceae
- Vernacular Name -
 - Hindi - Tamalgota (जमलगोटा)
 - English - Purging Croton
- Synonyms -
 - ✓ जेपाल
 - तिन्तिडीफल
 - ✓ दन्तीबीज
 - ✓ हास्तिदन्ती
- poisonous part -
 - Seeds, Stem & leaves.
- Habit - (Tree)
 - A tropical evergreen tree, seen all over India.
- Habitat - All over India.

• रसायनिक -

- रस - कड़
- गुण - गुरु, रूक्ष
- वीर्य - उष्ण
- विपाक - कड़

• Toxic chemical Constituent -

- Croton
- Crotonoside
- Crotonoleic acid

• Signs & Symptoms -

- Hot burning pain from mouth to stomach.
- Salivation
- Nausea & Vomiting
- *Diarrhoea
- Purgation
- Vertigo

• Fatal dose -

- 1-4 Seeds (crushed)
- 20 drops oil in adult.

• Fatal period - (4 - 6 Hr)

- Avg. 4 - 6 hr.
- Greater than 3 days also.

• Management -

- Gastric lavage.
 - Stomach wash -
 - Activated charcoal.
 - Demulcent drink.
- * Symptomatic treatment

• Post mortem Appearances -

- Congestion.
- Inflammation and erosion of the mucosa of stomach.
- Signs of inflammation in GIT.

• Medico - legal importance -

- Accidental deaths.
- Abortifacient.
- Suicidal & homicidal are rare.

• औषध योग -

- जयपालाञ्जन
- जलोदशरि रस
- इच्छाभेदि रस

• Therapeutical Dose -

- ✓ $1/8$ - $1/4$ गुञ्जा -
- ✓ (Seed 25 - 50 mg) -

2. गुग्गुला

- Types of poison - Organic irritant poison
- Botanical Name - Abrus precatorius
- Family - Fabaceae / leguminose
- Vernacular name -
 - Hindi - गुग्गुला
 - English - Indian liquorice.
- Synonyms -
 - रक्तिका
 - रक्ता
 - ताम्रीका
 - शीतपाकी
- Toxic part - Seed, root, leaves.
- Habit -
 - deciduous, slender, twining, **climber**.
- Habitat -
 - It is found all over India.

• रसपञ्चक -

- रस - तिक्त, कषाय
- गुण - लघु
- वीर्य - उष्ण
- विपाक - कटु

• Toxic Chemical Constituents -

- Abrin
- Abrine
- Abralin

• Sign & Symptoms -

- GI irritation
- Nausea
- Vomiting
- abdominal pain
- diarrhoea
- Swelling
- Vertigo

• Fatal dose -

- 1-2 Crushed seeds.
- 90-120 mg by injection.

• Fatal period -

- 3-5 days.

• Management —

- Stomach Wash
- Activated charcoal
- Purgatives
- Injection of antiabrin.
- Antidote.
- Symptomatic treatment

• Post mortem Appearance —

- injured site is swollen.
- edema at site of injection.
- haemorrhagic patches on the skin, pleura, pericardium & peritoneum.
- Liver, spleen, kidneys congested.

• Medicolegal importance —

- Homicide
- Accidental
- Suicidal
- Cattle poison

• औषध योग —

- गुग्गातैल
- गुग्गाजीवनरस
- गुग्गाभद्र रस
- मिलाभृंगोदी तैल

• Therapeutic dose — used as externally

- बीज चूर्ण — $\frac{1}{2}$ — $1\frac{1}{2}$ शक्लि

3. भल्लातक

- Type of poison - Organic irritant poison
- Botanical Name - *Semecarpus anacardium*
- Family - Anacardiaceae
- Vernacular Name
 - Hindi - भिलव
 - English - Marking nut
- Synonyms
 - अग्निमुखी
 - अशुक्ल
 - भल्ली
 - वीर वृक्ष
- Toxic part - Seed (Nut)
- Habit - (Tree)
 - Moderate sized, deciduous tree
- Habitat -
 - Tropical region & Central part of India

• रसपञ्चक -

- रस - कटु, तिक्त, कषाय
- गुण - लघु, स्निग्ध, तीक्ष्ण
- वीर्य - उष्ण
- विपाक - मधुर imp.

• Toxic Chemical Constituent -

- Sennecarpol + Anacardic acid
- bhilwanol.

• Sign & Symptom -

- Nausea
- Vomitting
- diarrhoea
- abdominal pain
- External application - causes blister formation.
- Taken orally, severe GI irritation, dyspnoea, Coma.

• Fatal Dose -

- 5 to 10 gm
- 5-8 seeds.

• Fatal period -

- 12 to 24 Hr.

• Management -

- Wash with Soap & Water.
- Stomach wash.
- demulcent.

• Post mortem Appearance -

- Blisters are seen in the mouth, Throat and Stomach.
- Stomach - Congested and inflamed.
- GIT inflammation.

• Medico-legal importance -

- Accidental.
- Homicidal & Suicidal poison is rare.
- Abortifacient.

• औषध योग -

- भल्लातक तेल
- भल्लातक लवण
- भल्लातक क्षीरपाक
- संजीवनी वटी.

• Therapeutic dose -

- ✓ 1 - 3 रात्ति
- ✓ तेल - 10-20 drops.

4) अर्क

- Type of poison - Irritant poison.
- Botanical name - *Calotropis procera*.
- Family - Asclepiadaceae.
- Vernacular name -
 - Hindi - अर्क
 - English - Madar
- Synonyms -
 - सूर्यक्षीर
 - अर्कपर्ण
 - क्षीरपर्ण
 - तूलफल
- Toxic part - Root are more poisonous.
 - Milky juice yielded when leaves & stem are cut.
- Habit - (Shrub)
 - Tall shrub, growing upto 3 m high.

• रसपञ्चक -

- रस - तिक्त - कटु
- गुण - लघु, रुक्ष, तीक्ष्ण
- वीर्य - उष्ण
- विपाक - कटु

• Toxic chemical constituent -

- Uscharin
- Calotoxin
- Calactin
- Calotropin
- gigantol

• Signs & Symptoms -

- Redness
- Inflammation
- irritation
- Conjunctivitis
- burning pain in throat & stomach.
- Nausea
- Vomitting
- diarrhoea
- Salivation

• Fatal dose -

Uncertain / No fix

• Fatal period -

- $\frac{1}{2}$ hr - 8 hrs.
(30 min)

- Management -
 - Gastric lavage
 - Stomach wash
 - Demulscents
 - Diazepam for Convulsion
 - Activated charcoal

- Post mortem appearance -
 - Signs of irritation in the intestine and stomach
 - Bloody discharges in nostrils & mouth
 - Congestion of small intestine, liver, spleen, kidney

- Medico-legal importance -
 - Homicide
 - Cattle poison
 - Accidental
 - Infanticide

- औषध योग -
 - अर्क लवण
 - अर्क तेल
 - अर्कश्वर रस

- Therapeutic Dose - Root bark powder = 0.5-1 gm

5) स्नुही

- Type of poison - Irritant poison
- Botanical Name - *Euphorbia nerifolia*
- Family - Euphorbiaceae
- Vernacular Name -
 - Hindi - Sehund
 - English - Milk hedge.
- Synonyms -
 - सुधाक्षीर
 - स्नुही कुग्ध
 - सुधाकुग्ध
 - स्नुकुग्ध
- Toxic part - Latex of stem & leaves.
 - Acid, milky juice exuded from the stem.
- Habit - (herb)
 - A large branched shrub or small tree.

• रसपञ्चक -

- रस - कटु
- गुण - स्निग्ध, तीक्ष्ण
- वीर्य - उष्ण
- विपाक - कटु

• Toxic chemical Constituent -

- Euphorbin
- Nerifolol
- Nerifolene
- Calcium malate

• Sign & Symptoms -

- Blisters on skin
- Conjunctivitis
- bitter taste
- burning pain in mouth
- diarrhea
- dilated pupil
- Nausea
- Vomitting
- diarrhea
- Swelling
- burning sensation

• Fatal dose -

- A teaspoonful of juice (25-30 ml) ✓

• Fatal period -

- 3-5 days.

• Management -

- Gastric leavage
- Stomach wash
- Demulcent drink
- Inj. Diazepam
- Activated charcoal

• post mortem Appearance -

- Not specific

• Medicolegal importance -

- Suicidal
- Accidental
- Homicidal

• औषध योग -

- स्नुही क्षीर घृत
- महा मरिच्यादि तैल

• Therapeutic Dose -

Root powder - 0.5-1 gm.

Stem juice - 5-10 ml.

6) लाङ्गली

- Type of poison - Organic irritant poison
- Botanical name - A bortifacient
- Family - Gloriosa Superba
- Vernacular Name - Liliaceae.
 - Hindi - लोकराहरी
 - English - Malabar glory lily.

• Synonyms -

- कालिहारिका
- आग्निजिह्वा
- स्वर्णकुसुमा

• Toxic part -

- Root. (Rhizome, tuber)

• Habit -

- A herbaceous tall glabrous branching climber.

• रसपञ्चक - लिङ्गादि

- रस - कटु, तिक्त
- गुण - लघु, तीक्ष्ण
- वीर्य - उष्ण
- विपाक - कटु

• Toxic chemical Constituent : -

- Colchicine
- Colchicamide
- Superbicine

• Signs & Symptoms -

- Burning sensation in throat.
- Nausea.
- Vomiting.
- profuse sweating.
- Respiratory failure.
- Diarrhoea.
- Abdominal pain.

• Fatal Dose -

- Greater than 0.75 gm
- ✓ Powder - 2-5 gm
- ✓ Abortifacient - 3-6 gm

• Fatal period -

- Not specific.
- ✓ 12-72 Hr.

• Management —

- Systematic treatment.
- Stomach wash.
- Demulcent drink.

• Post mortem appearance —

- No specific features are noticed.

• Medico legal Importance :-

- Abortifacient.
- Suicide.
- Accidental

• औषध योग —

- लाङ्गल्यादी वटी.
- लाङ्गली तेल.
- लाङ्गल्यादी चूर्ण.

• Therapeutic Dose — 250-500 mg.

① Arsenic -• Nomenclature :-

- Sanskrit - Gauripashan (गौरीपाषाण)
- Hindi - Sankhiya (संखीय)
- English - White Arsenic

• Type of poison :-

: Ayurveda - स्थायर धातु विष

- Modern - Irritant mettalic poison

• Toxic Compound :-

- Oxide - As_2O_3 , As_2O_5 & As
- Sulphide - As_2S_2 , As_2S_3
- Copper Arsenite
- Organic Arsenicals - Carbarsonne
- Arsine Gas - Arsenic trihydrides.

✓ Mode of Action :-

- Ayurveda - पित्त विकृती, पाकु & शोफ due to उष्ण विर्य
- कटु विपाक + रस.

- Modern - Cause Irritation & Inflammation to Mucus membrane of GIT.
- In $\uparrow$ permeability of Small blood Vessels.

✓ Fatal dose :-

- Arsenic trioxide - 120-300 mg

✓ Fatal period :-

- 2-4 Hrs.

✓ Signs -

- Tongue - Dries.
- Pulse - BP; hypotension
- Death due to Hypovolemic shock & Circulatory Failure.

✓ Symptoms -

- Excessive thirst
- Pain & Cramps in Abdomen
- Excessive → Salivation
- Nausea
- Vomiting

• Chronic toxicity -

- GIT - loss of Appetite
- Skin - Patchy Pigmentation
- Anemia
- Leucopenia
- Thrombocytopenia
- Peripheral Neuropathy.

✓ Treatment -

- Gastric lavage - Antidote.
- Demulcents - like milk, butter.
- purgatives.
- BAL
- Hemodialysis.
- exchange transfusion.

✓ PM Apperance -

- Eyeballs sunken
- Skin Cyanosed
- mucosa of the stomach is swollen
- Inflammation in mucous membrane of mouth, pharynx & oesophagus.
- Hemorrhages in abdominal organs, larynx & lungs.

✓ Medicolegal Case -

- Accidental
- Homicidal
- Suicidal

* formulation

* Therapeutic dose

* Mercury *

② Mercury -

• Nomenclature -

- Sanskrit - रस, रसेन्द्रा, पारद
- English - Mercury
- Hindi - पारा

• Type of poison -

- Irritant & Corrosive poison

• Toxic Compound -

- Chloride - Hg_2Cl_2 & Hg_2Cl_3
- Sulphide - HgS
- Oxide - HgO
- Nitrate - $\text{Hg}(\text{NO}_3)_2$

• Mode of Action -

- The mercuric ion binds with Sulphydryl groups of enzymes & cellular proteins.
- It is rapidly converted to mercuric ions in the blood which can lead to renal tubular damage.
- In CNS, it acts mainly on Cerebellum, basal ganglia & Corpus Callosum.

• Fatal dose -

- Mercuric chloride - 1-2 gm.
- Mercuric Nitrate - 4 gm

• Fatal period -

- 3-5 days.

• Signs & Symptoms -

- Metallic taste
- Constriction of throat
- Hoarseness of voice
- Difficulty in breathing
- Nausea
- Vomiting
- Blurred vision
- Uraemia
- loosening of teeth
- ✓ - Minamata disease

• Chronic Toxicity -

- Mercurialentis
- Hatter shake & Danbury tremor
- mercuria erethism
- Non specific

• Treatment -

- Gastric lavage.
- Use of antidotes.
- BAL
- DMSA.
- Colonic lavage.
- Haemodialysis.

• Post mortem appearance -

- Inflammation, Congestion, Coagulation & Corrosion of GIT mucosa.
- Haemorrhagic glomerular nephritis.
- Liver is Congested and shows Fatty changes.

• Medicolegal case -

- Accidental - Bleaching Creams
- Suicidal
- Homicidal

* Lead *

3)

Lead

• Nomenclature :-

- Sanskrit - Naga
- English - Lead
- Hindi - Seesam

• Type of poison :-

- Irritant metallic poison

• Toxic Compound :-

- Oxide - PbO , PbO_2
- Sulphide - PbS
- Lead carbonate
- Organic Lead - Lead acetate

• Mode of Action :-

- Cause irritation & inflammation to mucus membrane of G.I.T.

• Fatal Dose :-

- Lead acetate - 20 gm
- Lead Carbonate - 40 gm
- Lead tetraethyl - 1 - 2 drops

• Fatal period -

- 1-2 days.

• Sign & Symptoms -

- Metallic taste.

- Salivation

- Excessive thirst

- bloody Vomiting

- Constipation

- Muscle Cramps.

- Headache

- Nausea.

• chronic toxicity -

• Facial pallor

• Lead Line

• Colic & Constipation

• Lead palsy

• Treatment -

- Gastric lavage

- Demulscents.

Antidotes {

- Sodium or magnesium Sulphate

- EDTA.

- Morphine & atropine for pain abdomen.

- Vit. B6, Vit D & Vit. C.

• Post mortem Appearance -

- Signs of acute gastroenteritis.
- mucosa of stomach thickened & covered with a grayish-white deposit.
- Stools are black.

• Medico legal Aspect -

- Suicide - rare
- Homicide - rare.
- Cattle poison.
- Acute poisoning - very rare
- Chronic poisoning - more common

* Copper *

4)

Copper

• Nomenclature

- Sanskrit - Tamra
- English - Copper
- Hindi - Tamba

• Type of poison

- Irritant metallic Poison.

• Toxic Compound

- Copper Sulphate - CuSO_4
- Copper Acetate

• Mode of Action

- It causes irritation & inflammation to mucus membrane of GIT.

• Fatal Dose

- Copper Sulphate - 30 gm
- Copper Subacetate - 15 gm

- Fatal period - 1-2 days.

- Signs & Symptoms -

- Metallic taste
- Burning pain
- Nausea
- Vomitting
- jaundice
- incr. salivation
- Diarrhoea with brown coloured stool.

Nausea
Vomitting
Diarrhoea
Salivation.

Abdominal pain
Metallic taste.

- Treatment -

- Gastric lavage.
- Diuretics.
- Demulcents.
- EDTA.
- BAL.
- Penicillamine.

Antidote {

- Post mortem -

- yellowish skin
- Greenish-blue froth of mouth & nostrils.

- Stomach Contents are greenish or bluish.

- Gastric mucosa may be corroded.

• Medico legal Aspects -

- Suicidal - rare

- homicidal - rare

- abortifacient

- Cattle poisoning

- Accidental poisoning.

• Treatment -

- Gastric lavage.

- Dantrolene

- Dantrolene

- AT-10

- BAL

- Penicillamine

• Post-mortem -

- Yellowish skin

- Greenish-blue color of mouth

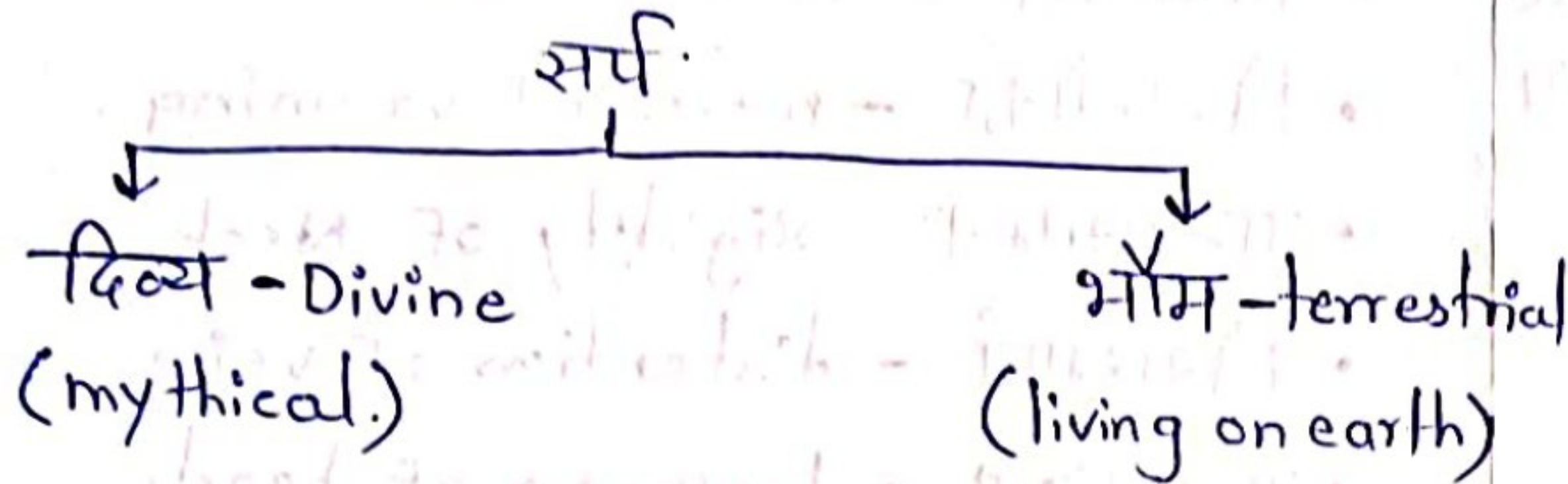
- metastasis

* सपविष * 11th chap

• Intro -

- There are more than 2000 species of snakes in the world.
- about 216 species in india, in which 52 are poisonous.

• Classification -



① दिव्य सर्प -

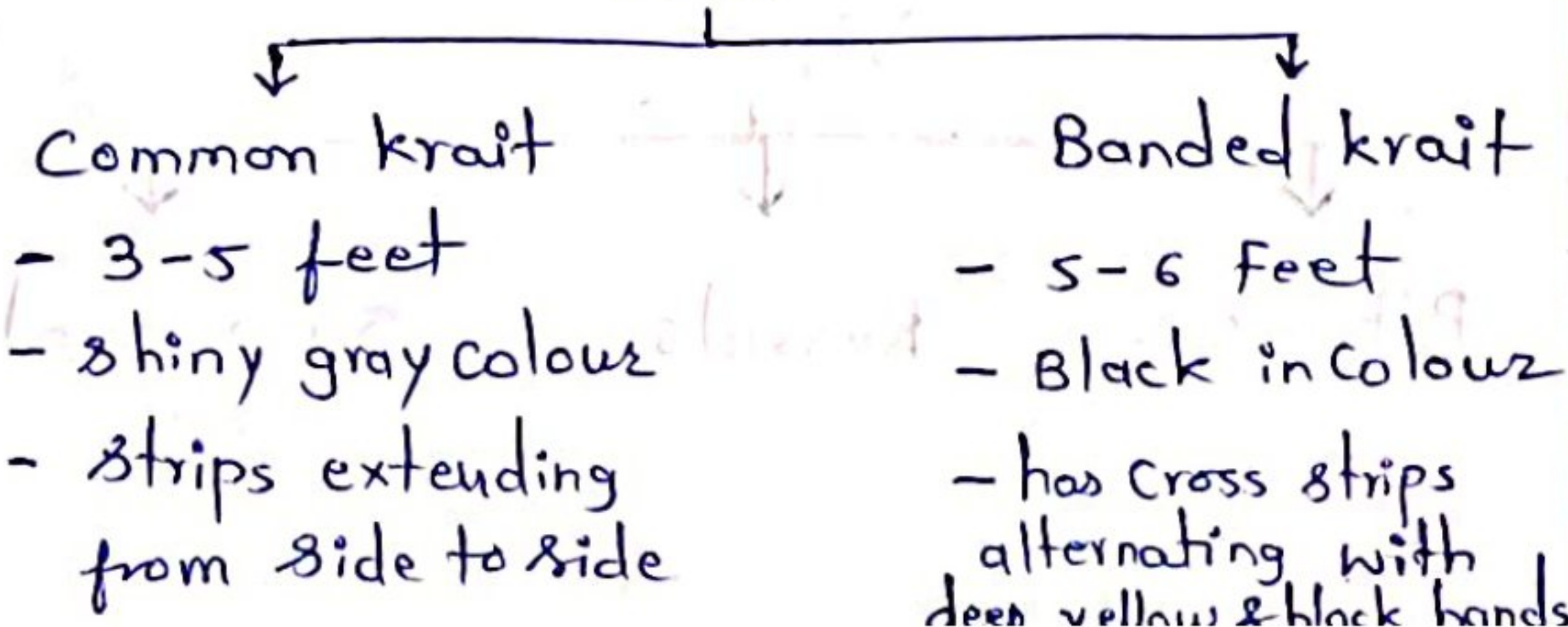
- They are वासुकी, तक्षक, अनंत, सागर, सागरालय, नन्द, उपनन्द

3) राजीमन्त / राजीमान - विषजक

• Identification -

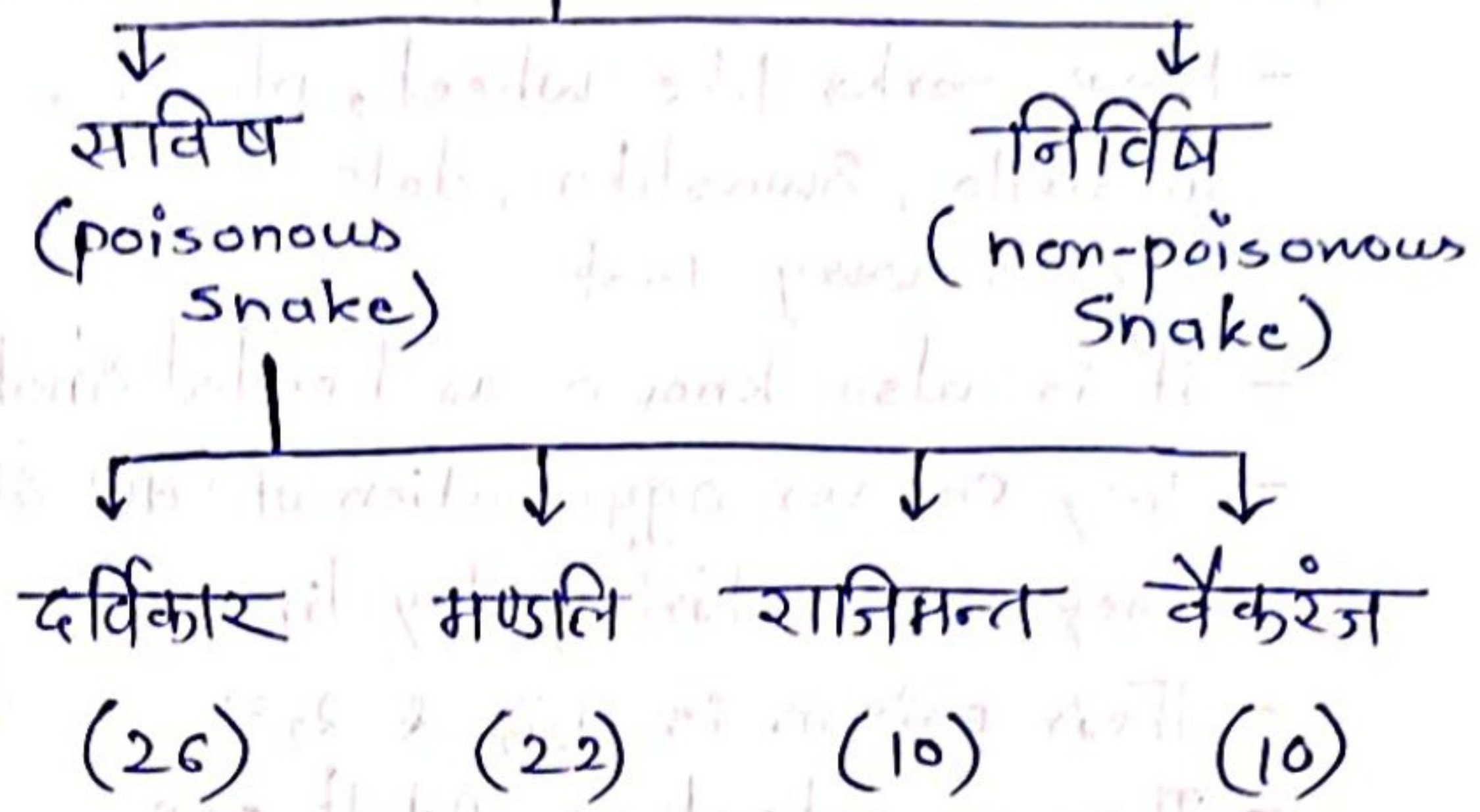
- Snakes which are unctous, of many colours.
- decorated with **stripes** above & sides of Their body.
- it is also called as राजीमन्त
- They cause aggravation of कफ दोष.
- They move during Night time.
- Their poison is मधुर & शीत
- They are potent in their middle age.

krait



② भौम सर्प -

भौम (80)



• Defⁿ

सर्पितुत अदि दंष्ट्रासु दारुणं जङ्गम विषम

- poison which is powerful & present in teeth of snakes, spiders etc is called जंगम विष.

* classify Snakes & Describe the feature of venomous & non-venomous Snakes & identify their bites.

Venomous

Non venomous

• Head	Triangular shaped or Diamond shaped.	Rounded head.
• Head Scales	Small	Large.
• pupils	Slits	Circular.
• Fangs	long & canalized.	No fangs. have sharp teeth
• Bite marks.	2	many.
• Belly Scale	large	Small.
• Heat Sensing pit	present	absent
• Tail	Compressed	Not Compressed

1) सर्पिकार -

• Identification. -

- Snake which makes phana/hood on it.
- Have marks like wheel, plough, umbrella, Swastika, dots.
- Moves very fast.
- it is also known as hooded snake.
- They causes aggravation of वात दोष.
- They move during day time.
- Their poison is कुटु & रुक्ष.
- They are potent in Adult age.

2 varieties.



Common cobra

King Cobra

- Length - 5-6 feet.
- Brown in colour.
- marks present on necks.
- Eyes has no lids & pupils are circular.
- Length - 12-15 feet.
- Black in colour.
- No marks on it.

• सामान्य चिकित्सा.

- 1) रक्तमोक्षण
- 2) अगद पान with मधु & सर्पि
- 3) वमन
- 4) नस्य & अञ्जन
- 5) वमन, भवागु
- 6) तीक्ष्ण शोधन
- 7) तीक्ष्ण वमन
- 8) अञ्जन, अगदपान
- 9) तीक्ष्ण नस्य
- 10) तीक्ष्ण अञ्जन

pupils are circular.

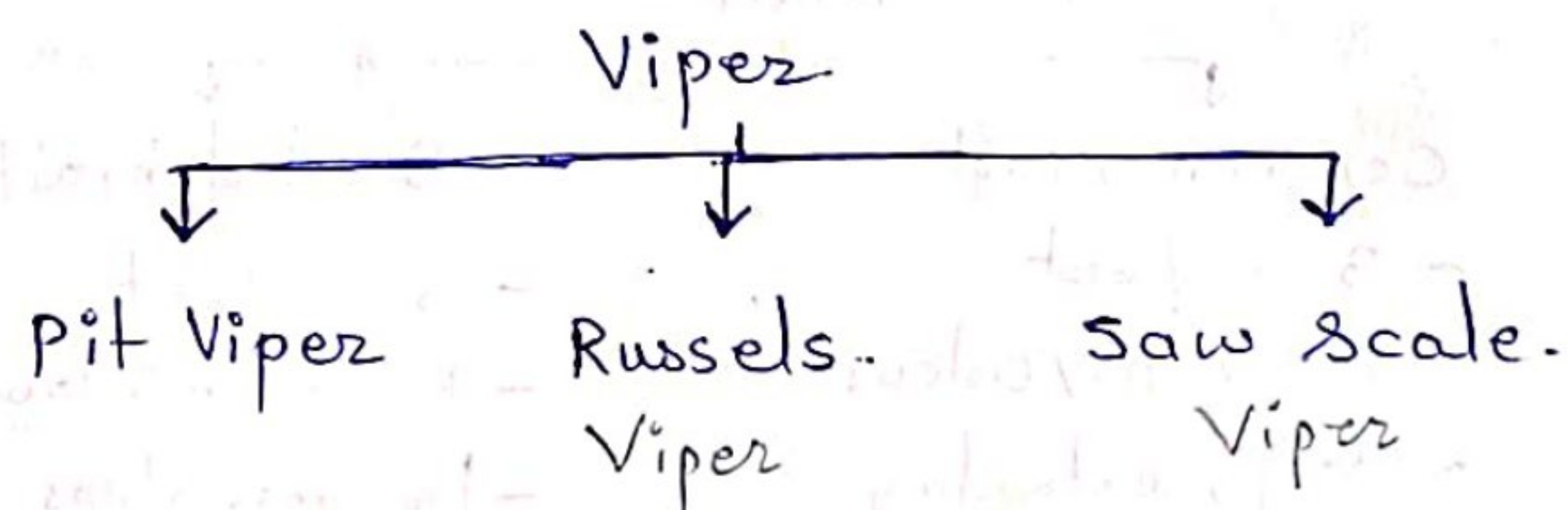
• Sign & Symptoms. -

- रुक्ष - dry.
- शीत ज्वर - Fever with rigors.
- सन्धि रुजा - pain in the joints.
- निद्रानाश - loss of sleep.
- विजृम्भिका - more of yawning.
- मन्यास्तम्भ - Rigidity of Neck.
- सिराध्मानं - distention of vein.
- शिरोगुरुत्वं - heaviness of head.
- अरुचि - anorexia.
- कास - cough
- श्वास - dyspnoea
- हिष्मा - Hiccup.
- तृष्णा - shivering.
- वेपथु - Thirst.
- lassitude. - आलस्य

2) मण्डली - मण्डलिका / मण्डलिका (ह)

• Identification -

- Snake which have patches of diff. kind on their body, which are big in size, irregular in shape.
- Moves slowly.
- it is also known as patched Snake.
- They causes aggravation of पित्त दोष
- They move during evening time.
- Their poison is आम्ल & उष्ण
- They are potent in old age



Snake

Venomous Snake

Non venomous Snake

1) Elapids (Neurotoxic)
Cobra, krait, Coral

• Rat Snake
• Water Snake

2) Viper (Vasculotoxic)
Pit. Viper & Pitless viper

• Python
• Earth Boa.

3) Sea Snake (Myotoxic)

• Common Sand Boa
• Grass Snake.

* Describe the fatal dose, fatal period, signs & symptoms of Common cobra, king cobra, Russell's viper, Saw scaled viper, pit vipers & Common krait.

Name	Fatal dose	Fatal period.
1) Common cobra	12 mg	8 Hr.
2) king cobra	12 mg	24 Hr.
3) Russell's viper	12 mg	4 days.
4) Saw scaled viper	8 mg	41 days
5) pit vipers.	50 mg.	6 Hr.
6) Common krait.	6 mg.	18 Hr.

Sign & Symptoms.

- Vomitting
- dizziness.
- Headache.
- excessive sweating
- colic Abdominal pain.
- Hyper salivation.
- Blurred vision.
- Excessive thirst

(राजपूत) * लुत विषकृ (Spider)

Intro -

- Bite of लुत is highly dread very difficult to understand.
- Very difficult treat by physician

Classification -

1) Based on दोष प्रकोप

वातिक पैतिक श्लेष्मिक सन्निपातिक

2) Based on विष प्रभाव

तीक्ष्ण विषयुक्त	मध्यम विषयुक्त	मन्द विषयुक्त
- Death occurs in 1 days	- Death occurs in 7-10 day	- Death occurs in 15 days.

3) Based on prognosis

कृच्छ्रसाध्य लुत असाध्य लुत

• सामान्य लक्षण -

- दद्रुमण्डल - Round rash
- ज्वर - fever
- मृदु - soft
- राग - Redness
- बकुवेदना - Pain
- श्याव - Blue
- पित - yellow
- दाह - Burning sensation.

• चिकित्सा -

- वमन
- विरेचन
- रक्तमोक्षण
- लेप
- चंदनादिलेप

• Diagnosis -

for severe case, it is necessary to do

- Blood count
- Blood sugar
- electrolytes
- creatinine

• लुतविष हेतु (10 उपक्रम)

- नख
- अंजन
- अग्नि
- पान
- घुमपान
- अवपीडन
- कुवल गर
- वमन
- विरेचन
- शिशमोक्षप

(वृश्चिक) * वृश्चिक विष * (Scorpion)

• Intro -

- Scorpion poisoning.
- Eight legged Arthropod.
- 30 varieties of वृश्चिक acc. to Ayur.

• भेद - $15 + 3 + 12 = 30$.

Based on poison contain.

तीक्ष्ण	मध्यम	मन्द
15	3	12
• श्वेत - white	• पित - yellow	• श्याव - Blue
• चित्र	• लोहित	• पित - yellow
• लोहित - Red		• कृष्ण - black
		• लोहित - Red.
- No joint in tail. (०)	- 3 joint in tail	- many joints in tails.
1-2 joint in tail.		

• सामान्य लक्षण -

- तीक्ष्ण - High penetrating
- श्याव - Bluish discolouration of skin
- दाह - Burning sensation
- रज - pain
- ज्वर - fever
- sweating

• Diagnosis -

- Blood count
- Blood sugar
- Electrolytes
- Creatinine

• चिकित्सा -

- मन्त्रविधी.
- लेपन
- अगदपान with घी & लवण
- अग्नि
- स्वेदन
- उष्ण सेक

સૌથી વધુ આવી શકે છે → સુક (semen)

साधक जीव (18)

शैविक विधायक -

आदशादलोनिं पाण्डु मण्डलानि त्रयोऽनघिः
लोभादेष्वस्य वादश्चापलासुद्वेषाविधादते ॥

पा०३३ (२२६) - Pale blood coming out in (च.वि.)

Hustel - Rashes..

उद्ग - Fever

अनादि - Anorexia

मोहरे (Haripilation)

दाह - Burning sensn.

312121 21210 - (Incurable sign and symptoms)

[illegible]

મૂર્છા - fainting (૫.૧.૨૨)

353114 - Swelling of body -
दोष - discoloration

discolouration

असकटि - Vomiting mixed with Blood

Qd2 - fever

12/12/2020 - heaviness of Head

excessive pallidation

deafness.

શિશિર (Treatment)

તત્કાલ - Immediate after Rat bite, Site should be burnt (cauterised) with shaft of an arrow or a minor if not there will be severe pain / Formation of chular rings.

મલ્લોત - Burnt area incised / scraped & fluid drained out.

તેળ - paste of શિશિર, ગાંજી, વક્રા, કુમકુમ and અમ્બદત્તી applied.

દાળ - Induced by drinking decoction of Jalini, sukakhyā or ankola or other vanaka dravyas

પેશાણ - પેશા prepared with decoction of ૨ તિલ્લી and Andumali deshyas symp. like abdominal pain, hiccup, loss of taste etc which is persisting after વાળ.

તિરેચન - Administered with paste of તિરેવં, તિર્જી and ત્રિફળ.

શિશોતિરેચન - Purgn of head is done with શાંત (gambresin) and fruit of શિશિર.

અઝન - Collyrium is prepared with juice of fish codung added with fine powder of vyasa.

9.

અવલે મયોર - Prepared of Fruit of Kapitha added with Juice of codung and honey.

10.

પેશાણ - Medicated ghee prepared with roots of Tanduliyaka / five parts of Kapitha Tree etc are used internally.

11.

કપિઠા યાત્ર - physician should remove kamla in wound which are hard and painful, by incising and then purify wound and to purdamin dosa.

RAT BITE

- Rats are various medium sized long tailed Rodhents
- Species of rats are found throughout the order Rodentia.

Scientific Classification -

kingdom → Animalia

Phylum → Chordata

class → Mammalia.

Order → Rodentia

Family → Muridae

• Rat-bite Fever (RBF) is an infectious disease caused by 2 diff. bacteria -

1. Streptobacillus moniliformis

The only reported bacteria that causes RBF in North America (Streptobacillary RBF)

• Spirillum minus, common in Asia (Spirillary RBF, also known as Sodeku)

• Rats are typically distinguished from mice by their size.

Large murine rodent include Rat

Smaller mouse

There are 56 known species of Rats in world

→ Black rats (Rattus Rattus)

→ Brown rats (Rattus Norvegicus)

• BLACK RAT ROOF RAT / SHIP RAT

Adult black rat - 12 to 18 cm long.

Tail - 15 cm

Weights - 75 to 230 grams

These are omnivores.

Eat - Seeds, fruit, stems, leaves etc.

Disease - Black rats carry no. of pathogens of which

plague, typhus, mumps, diphtheria etc.

* BROWN RAT / NORWAY RAT

• Usually brown colour / black grey

• Large in size.

• Length → 20-25 cm

• Tail → 25 cm

• Body weight → 350g - males

250g - females.

• These also carry pathogens result in disease.

• Symptoms and signs of Streptobacillary RBF

Fever

Worthing

Headache

Muscle pain

Joint pain or swelling (about 5 in 10 people with RBF)

Rash (occurs in about 3 out of 4 people with RBF)

Symptoms usually begin 3 to 10 days after

contact with bacteria, but can be delayed as

as week.

Treatment -

with Antibiotics is same for both types of infection.

The drugs responds to penicillin, and where allergies to penicillin, erythromycin or Tetracyclines are used.

Introduction-

In general, અનંક વિષ is used for bite by rabid dogs, on large scale, include bite by all kinds of canine.

In general, bite of all dogs is non-poisonous, bite attains toxicity only when dog itself is afflicted by toxicity.

વિદ્યમાન : Cause of અનંક વિષ .

When લાત gets agg. in body of dog, fox, jackal hyena, bear, Tiger etc, it combines with aggravated કષ્ઠ and accumulated in channels of Their sense organs and causes loss of sense or hampers the consciousness.

Signs and Symptoms in Animal Affected.

પ્રજ્વળિત થયેલ - hanging its Tail

કેંક - drooping down of lower jaw

ફોરમ્ - drooping of its shoulders

આવગતવાન - Copious flow of saliva from mouth

અવ્યક્ત - Animal is intensely deaf

અવ્યક્ત અથ - Animal is intensely blind

અવ્યવસ્થાપિતિયાવતિ - Animal moves here and there.

અનંક વિષ લક્ષણ - Features of અનંક વિષ

લક્ષણ

અવ્યવસ્થાપિતિયાવતિ	અવ્યવસ્થાપિતિયાવતિ	અવ્યવસ્થાપિતિયાવતિ
અવ્યવસ્થાપિતિયાવતિ	અવ્યવસ્થાપિતિયાવતિ	અવ્યવસ્થાપિતિયાવતિ

અનંક વિષ લક્ષણ -

Symptoms of bites having poison in them include-

અવ્યવસ્થાપિતિયાવતિ - Itching

અવ્યવસ્થાપિતિયાવતિ - Pain

અવ્યવસ્થાપિતિયાવતિ - Discoloration

અવ્યવસ્થાપિતિયાવતિ - loss of Tactile sense

અવ્યવસ્થાપિતિયાવતિ - Exudation

અવ્યવસ્થાપિતિયાવતિ - Fever

અવ્યવસ્થાપિતિયાવતિ - Burning sense in Abdomen.

અવ્યવસ્થાપિતિયાવતિ - site of bite become red.

અવ્યવસ્થાપિતિયાવતિ - Pain

અવ્યવસ્થાપિતિયાવતિ - suppuration

અવ્યવસ્થાપિતિયાવતિ - swelling

અવ્યવસ્થાપિતિયાવતિ - development of cystic swellings.

અવ્યવસ્થાપિતિયાવતિ - contractions

અવ્યવસ્થાપિતિયાવતિ - Tearing and falling of muscles

અવ્યવસ્થાપિતિયાવતિ - development of Round patches

અવ્યવસ્થાપિતિયાવતિ - development of swelling like lotus seeds

The Bites without above symp. are said to be નિર્વિષ

सामान्य लक्षण - (General Signs and symptoms) .

दंशनेन विदग्ध्य रूतः कृष्णं क्षरत्यस्तक ।
हृदि रोक्क वर रक्तञ्च तूष्णीं मूर्च्छाभव अभुञ्च ॥

Bitten by rabid dog, person develops -

- loss of sense at Bite site
- Black coloured Blood comes out from site of Bite
- He develops pain in heart, head, Fever, rigidity, Thirst and Fainting.

असाध्य लक्षण - (Incurable Features)

दधो येन तु तपस्वि, श्वेद कुर्वन् विनश्यति ।
पशुसामेव च अकस्मादादशं सानिवादिषु ॥

person bitten by rabid animal imitates the animal in actions and voice, sees them in mirrors, water etc without any reason and finally dies.

It is also an असाध्य लक्षण OF अलर्क विष.

अलर्क विष - असह्य शब्दको, अक्षय्य सन्तसेत् ।

असह्य - असाध्य लक्षण, शस्त्रास, शान्तिगाम् ॥ (अ.सं. 3. 46/13)

He who gets frightened by sight, touch and sound of

water, should be considered as a patient of Udasantarasa

which is a fatal sign

चिकित्सा OF अलर्क विष -

विस्त्रावण / रक्तमोक्षण - Blood should be removed from bite

1. दहन - site of bite should be burnt with ghee

2. प्रदेह - आत is applied as warm poultice bite site.

3. पुराण - मग्न पान - Later, patient is to be made to eat old ghee.

4. लेप - Rools of nala macerated with is beneficial For pana and तैप

5. शोधन / विरचन - Patient should be administered purgative drug along with milk of अर्क.

6. नश्य - अञ्जन - लेप - पान - लशुन, Ushana, Vaidahi and var macerated with ox bile is used for तस्य अञ्जन, तैप, पान

7. शरपुङ्ख प्रयोग - Special treatment explained in अलर्क विष.

अलर्क विष -

- 1) Rools of शरपुङ्ख - macerated
- 2) Rools of एन्दुर - 1/2 कर्ष required
- 3) तण्डुल (Rice) - as required of तण्डुल and paste

This ball of paste is enveloped with leaves

of elephant

with beavermud blood

Hard soil / pan cake is prepared out of it

That should be consumed at the time
of meals (mid-day)

by person suffering from poison of

Rabid dog for complete nullification
of poison.

Use of These cakes may cause complete at time of dig

which should be subdued by retiring patient to dry
and cool chamber away from water.

After symp. subsides, patient should be

given bath Next day

he must be made to take warm

meals of Shashika shali
along with milk.

This Treatment should be done for 3 to 5 days with
half quantity of mentioned drugs.

9)

Shana - fire

108, pots filled with water, precious gems

and potent herbs

place near river, meeting of 4 roads / sacrificial ground

of the size of, cows hide is selected, cleaned,

washed with cow dung water and covered

with Kusha (grass) grass.

pots are placed on this place, decorated

with garlands and their mouth covered.

Fire is lit near by, pots are sanctified with

hymns 108 Times.

person bitten by rabid dog is then given a

ceremonial bath with water in the pots,

chanting hymns.

श्रीराम

After snana fire, person should be administered

with strong purificatory therapies because in a person

who is not purified well, आतक विष gets aggravated

again, though wound has healed.

Definition -

Rabies is a viral disease which causes an inflammation (Acute) of Brain in humans and other warm blooded animals.

→ It spreads when an infected animal scratches

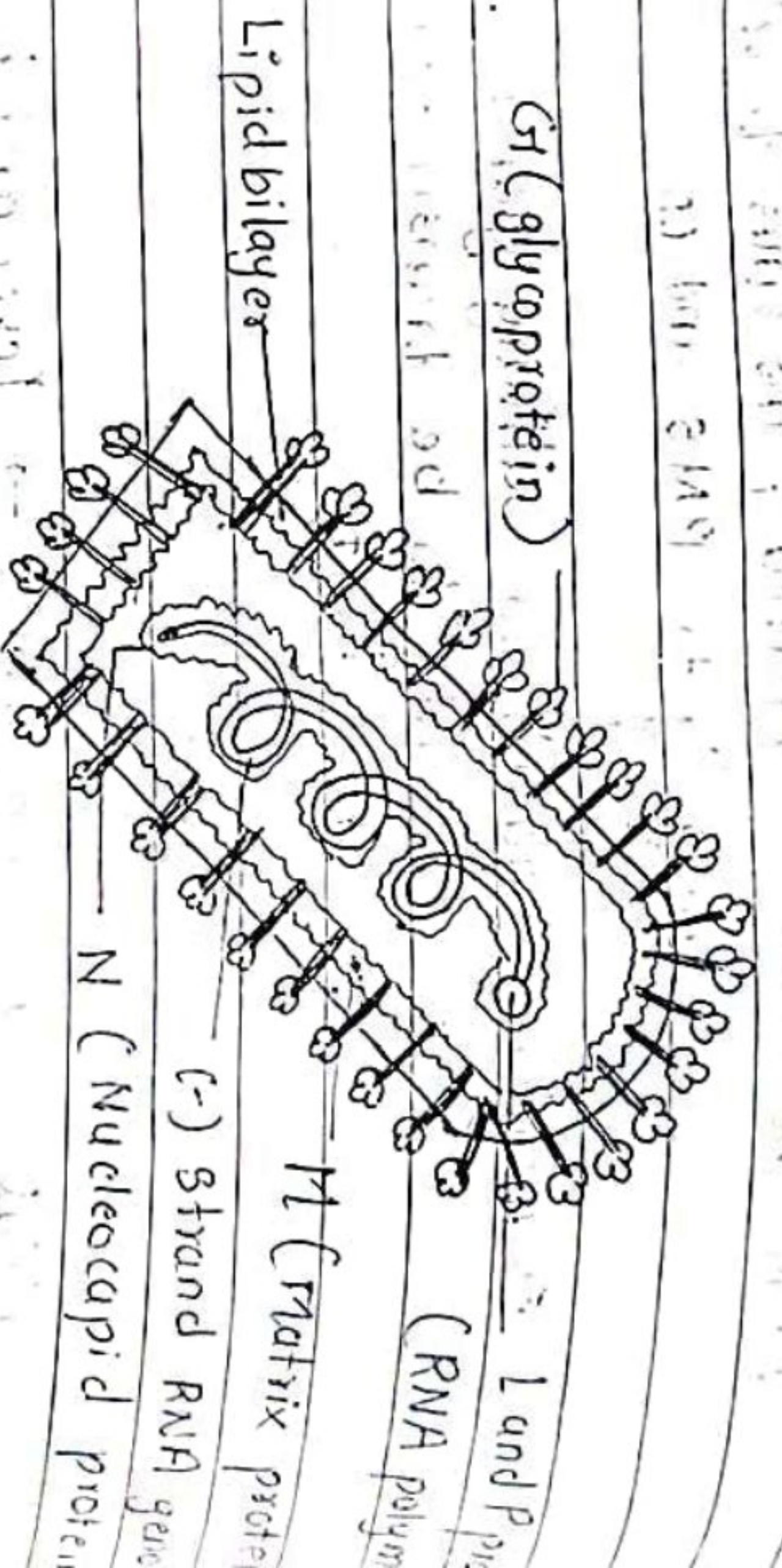
→ Saliva from an infected animal can also transmit rabies if saliva comes in contact with eyes, nose or mouth.

→ Dogs are most common animal spreading rabies via dog bites.

Facts -

→ which cause about 30,000 to 40,000 deaths worldwide per year.

→ World Rabies Day = 28 September.



Lyssa Virus

Family → Rhabdovirus

Pathogenesis -

Dog bite

Through acetylcholine receptor cellular membrane allowing entry the virus into cell.

Virus then uses acidic environment, releasing its proteins and single stranded RNA into cytoplasm.

Viral replication in muscle cells and nerve fibers.

Virus is neurotropic, travelling along neural pathways.

Replicating in motor neurons and eventually reaching the brain.

After the brain is infected, the virus travels centrifugally to PMS and CNS

Eventually migrating to salivary gland, where it is ready to be transmitted to next host

Signs and symptoms:

Initial signs and symptoms → Fever and headache.

As rabies progress and causes inflammation of brain and meninges it develops → partial paralysis

- Anxiety
- Insomnia
- Confusion
- Agitation
- Abnormal behaviour
- Paranoia
- Hallucinations
- Delirium
- Coma

Person may also have hydrophobia.

Diagnosis:

RTPCR - Reverse transcription polymerase chain rxn

for viral isolation from infected saliva, CSF, or brain.

Fluorescent antibody Test.

Differential Diagnosis -
→ Encephalitis

Treatment -

Immediate wash the wound with soap and running water for at least 15 min.

Disinfect wound with Alcohol or an iodine soln (if possible)

Immediate consult a doctor or go to the nearest health facility.

Vaccination.

- 1st dose → 0 day
- 2nd dose → 3rd day
- 3rd dose → 7th day
- 4th dose → 14th day
- 5th dose → 28th day
- Booster dose → 90th day

Wash

* कीट उत्पत्ति / origin of Insects -

सर्पिणादेव विषमस्य शुक्राणुश्च शत कोशलाः (अ.६.३.३१/१)

कीट one born from putrified urine, faeces, semen, egg and cadaver of snakes.

* कीट प्रकार (Types of Insects)

अथ १० शुक्रजन्तवः १४४ Types.

तान्त्र कीट पितृव्य कीट कफज कीट सन्निपातज कीट

* कीट संख्या (No. of Insects - ६३)

१२ तान्त्र कीट - १४

१. कुलशिलाश १०. उरश्च
२. तुण्डिकेशी ११. शारिका
३. शङ्खी १२. गुरुवैदल
४. शतकुलीशक १३. क्षमावकुल
५. अच्युतिङ्ग १४. आशीशानि
६. अग्निनाभा १५. श्व
७. चिच्छिदिङ्ग १६. शिखरीशिक
८. ताम्रशिक १७. शतबाहु
९. आनन्दक १८. रत्नशानि

२१ पैलिक कीट / पितृव्य — २४

- १) कौण्डिन्यक १३) आरिमेक
- २) कण्ठाक १४) पद्मकीट
- ३) तरदी १५) दुन्दुभिक
- ४) पञ्चश्रिक १६) मकर
- ५) विनासिका १७) शतपातक
- ६) धास्माणिका १८) पञ्चातक
- ७) विन्दुल १९) पाकमत्स्य
- ८) श्वमार २०) कुष्माण्ड
- ९) वाष्मकी २१) बार्दभी
- १०) पित्रिच २२) क्लीन
- ११) कुम्भी २३) कुमिसराश
- १२) वर्चःकीट २४) उत्कलेशक

३२ कफज कीट — १३

- १) विश्वश्वार ८) किरिश
- २) पञ्चशुक्ल ९) सूचीमुख
- ३) पञ्चकृष्ण १०) कुष्माण्ड
- ४) कोविल ११) कर्षावगारिक
- ५) शैशक १२) बार्दभक
- ६) प्रचलक १३) मोटक
- ७) लज्ज १४)

४१ सन्निपातज कीट - १२

- १) तुङ्गिनाभ ५) कोष्ठाशानि
- २) विचिलक ६) शिखीकर
- ३) तानक ७) शिखीकर
- ४) लोहक ८) तुण्डिनाभ
- ९) शिखीकर १०) वल्लुनि
- ११) शिखीकर १२) आनकीट

• कीट दंश लक्षण - Signs and symptoms

PAGE NO.:
DATE: / /

PAGE NO.:
DATE: / /

Acc. to दोषाः -

वात कीट -

दंश तीव्र

- pricking pain

रक्त उच्छेद

- ↑ pain at bite site.

पित्त कीट -

उत्पन्न संस्कार

- slight exudation

गर्ह

- severe burning sensation

रोग

- Redness

विसर्पित

- spreading in nature

एकवर्ण फल प्रत्यक्ष - resembling ripe fruit of Pila

खट्वर - सदृश - or resembling Khajura.

कफ कीट -

मीठ रोग - mild pain

एकवर्ण रोग - swelling resembling a ripe udumbara fruit.

सन्निपात कीट -

प्रचुर स्रावः - copious exudation.

सर्वविध रोग - symp. of all doshas.

Acc. to Qualities they possess -

वायव्य - 18 in No.

Qualities of वायु and cause Agg. of वात in body.

bite by these produce disease of वात Aggravation.

2. आन्त्रेय - 24 in No.

- Their bite produces disease caused by agg. of पित्त

3. रोग - 13 in No.

- Insects possess qualities of water, aggravate कफ in body and their bite gives rise to disease caused by कफ

4. सन्निपातिक - 12 in No.

- They cause loss of life.
- Bitten by these stage of poisoning are similar to those of snakes, symp. are those produced by aggravated dosa and severe disease are caused by their bite.

C. Acc. to its Severity -

1. मन्द विष कीट -

प्रेषक - salivation

अरोचक - loss of Taste

हृदि - vomiting

शिरोभोग - feeling of heaviness of head

कोट - Rashes

कण्डू - itching.

2. तीक्ष्ण विष कीट -

उदर - fever

अङ्गुर्भ - bodyache

हृदि - vomiting

अतिसार - diarrhoea

गर्ह - Burning sensⁿ

हृदय - hiccup

D. Accn to Nature of poison

9. दूषी विष कीट -

कण्डू - Itching

दाह - Burning sensation

वीर्य - Erysipelas

पूक - Suppuration.

३. शोणित कीट -

मूर्च्छा - Fainting

कल - Pain

तृष्णा - Thirst

अभ्रति - Anorexia

६. Acc. to presence or Absence of poison.

१. शविष कीट लक्षण

कण्डू - Itching

निश्चोद - piercing pain

वर्ण - discoloration of skin

दाह - Burning sensn

शोण - Redness

पूक - pain

• लेप (external application) in कीट विष.

शिरवृक्षत्व गालेपः शुद्धे कीटविषाणुः ॥

(च.चि. २३/१९)

In Insect poisoning,

शिरवृक्षत्व गालेप [Paste of bark of latex bearing Trees]

apptⁿ acts as poison.

कुक्कुटोदः शोथदाहोद्वेगपहः । (च.चि. २३/१९)

The paste of कुक्कुट or कु Mautika is good

alleviating शोथ (Swelling)

दाह (Burning sensn)

तौद (piercing pain)

उदर (fever)

12.

क्रिम वि

Date . / .
Page No.

• Inorganic Acids -

① Sulphuric acid :- H_2SO_4

- Action -
 - Corrosive, irritant if diluted.

• Symptoms -

- Burning pain in throat.
 - Black vomit.
 - Thirst.
 - epigastrium.
 - dysphasia.
 - chalky white teeth.
 - Black trickle marks on lips.
 - Abdominal pain.
- Vision loss
- Breathing difficulty
- Skin & eyes burning
- Vomiting & blood.

• Fatal Dose -

- 10-15 ml.

• Fatal period -

- 12-24 hrs.

• Management -

- Avoid gastric lavage.
- emetics.

- Demulcents like egg white, milk, morphine for pain.
- IV fluids.

• Post mortem appearance -

- Corrosion of mucous membranes of lips.

• Medico legal aspects -

- Accidental
- Vitriolage
- Suicidal
- Homicidal } Rare

• Properties -

- Heavy
- Colourless
- odourless
- Non fuming.

② Hydrochloric acid :- HCl

- Action -
- Corrosive, irritant if diluted

- Symptoms -
- Burning pain in throat.
- Epigastrium
- Vomiting with blood.
- Thirst.
- excoriation of lips & sheds of mucous membrane.

- Breathing difficulty.

- Fatal Dose -

- 20-30 ml

- Fatal period -
- 24-36 hrs.

- Management -

- Demulcents like egg white, milk etc. can be given.
- Morphine for pain.

- flush w H_2O .

- Supportive of respiratory & cardiovascular function.

- Post mortem appearance -
 - Inflammation & Edema of Respiratory passage.
 - Corrosion is less severe
 - Stomach contains brownish fluid.
 - perforation stomach is rare.
 - Corrosion of mucous membrane

- Medico legal aspect -
 - Accidental
 - Vitriolage
 - Suicidal

- properties -

- Volatile
- Colourless
- Odourless
- fuming

- Management

- Dilute with water
- Give milk or oil
- Induce vomiting

③ Nitric acid :- HNO_2 $[\text{HNO}_3]$

- Action - Corrosive, irritant if diluted.

• Symptoms -

- Burning pain
- yellow coloration of mucous membrane & teeth.
- yellow brown vomitus.
- oliguria
- Shock
- choking
- Dyspnoea & Cough.

• Fatal Dose -

- 10-15 ml

• Fatal Period -

- 12-24 hr.

• Management -

- Avoid gastric lavage, emetics.
- Demulcents like egg white, milk, Morphine for pain.
- IV fluids.

• Post mortem Appearance - (5)

Yellowish
discoloration
- perforation
is common.

- Tissues are yellow stained.
- Corrosion of mucous membrane may appear brown or brownish black.
- Corrosion of skin, mouth, lips.

• Medico legal aspect -

- Accidental
- Vitriolage
- Suicidal

• properties -

- clear
- colourless
- Pungent odour
- burning liquid

• Organic acid = cholelithiasis

① Oxalic acid - $C_2H_2O_4 \cdot 12H_2O$

• Action -

- Corrosive.

• Symptoms -
- diarrhoea.

- Nausea & eructation followed by Vomiting.

- Tenderness

- Cramps.

- Hypocalcaemia.

- Uraemia

- Mucus has Coffee-ground appearance.

- Oxaluria.

- renal failure.

• Fatal Dose -

- 15-20 gm

• Fatal period -

- 1-2 hrs.

• Management -

- Gastric lavage.

- Antidotes like lime water

Calcium lactate

Demulcents

lactate.

- wash w water.

- Post mortem appearance -
 - Scalded mucosa of GIT, mouth, tongue, pharynx
 - Burns of face & skin are rare
 - Mucous membrane of stomach is reddened.
 - Kidney shows edema

- Medico legal aspect -
 - Accidental
 - Suicidal (rare)
 - Homicidal

• properties

- White Crystalline solid
- Colourless
- odourless
- Bitter taste
- Transparent

② Carbolic acid - C_6H_5OH

- Action -
 - Corrosive
- Symptoms -
 - Nausea, Headache
 - Pain, Burning sensation, Corrosion
 - Tingling sensation, numbness
 - diarrhoea
 - muscular spasm
 - skin - cold, clammy
 - ∇ HT, Coma, Unconsciousness
- Fatal period -
 - 3-4 hrs
- Fatal Dose -
 - 10-15 gm
- Management -
 - Stomach wash
 - Demulcents
 - O_2 Support
- Post mortem Appearance -
 - Corrosion of skin, mouth, chn

- Tongue is usually white & swollen and there is smell of phenol about the mouth -
- urine - expose to air turns green.

• Medico legal aspect -

- Accidental -

- Suicidal -

- Homicidal -

• properties -

- White Crystalline solid

- Colourless

- phenol odour

- Sweet taste

• Management -

- Stomach wash

- Emulsi

- Support

• Post mortem Appearance -

- Corrosion of skin & mouth

③ Formic acid — HCOOH

Action — Corrosive

• Symptoms — chest pain

— Abdominal pain

- Burning sensation
- ulceration
- Vomiting
- dilation of pupils
- haemolysis

• Fatal Dose —

— 50 — 200 ml

• Fatal period —

— Uncertain

• Management —

- Gastric lavage
- Ventilation
- activated charcoal
- emesis
- dialysis
- Antidote
- Demulcent

• Post mortem appearance. -

- Blackish discoloration of mucosa
- pulmonary edema

• Medico legal aspect. -

- Accidental.

• properties. -

- easily available
- colourless
- pungent odour
- Acidic test
- Corrosive & Irritant

* Potassium hydroxide *

• Formula - KOH .

• Synonym -

- Caustic potash
- potassium hydrate

• properties -

- White or yellow colour.
- Odourless.

• Symptoms -

- Highly corrosive chemical
- Severe Irritation
- Burn skin & eyes.
- Headache, dizziness
- Nausea, Vomiting.
- Can irritate nose & throat & lungs
- Skin allergy

• Management -

- flush with water & soap.
- ABC case.
- fluid through IV line.
- Surgical removal of burned skin.
- wash the eyes.

• Use -

- making soap
- electrolyte in alkaline batteries & in electroplating
- paint remover

* Sodium hydroxide *

- formula - NaOH
- Synonyms - Caustic soda
Sodium hydroxide
- properties -
 - White Colour.
 - odourless
 - Non-Combustible solid
 - Corrosive.
- Symptoms -
 - Vomiting
 - abdominal pain
 - shock
 - perforation of GIT.
 - Corrosive Nature.
- Management -
 - clothing removed & skin is washed
 - IV fluid given
 - Respiratory or cardiovascular support.
- Toxicity -
 - inhaled causes swelling of throat or larynx.
 - strongly irritating & corrosive.
 - causes severe burn
 - permanent damage to any tissue
 - burn in the eyes
 - leads to permanent eye damage

• Asphyxiants -

① Carbon Monoxide - CO

• Action -

- Asphyxiants.

• Symptoms -

- fatigue, dizziness, Nausea, Vomiting
- Breathlessness
- mild headache.
- weakness
- increasing confusion.
- Rash blisters
- dilated pupils.
- coma
- Hallucinations

• Fatal Dose -

- 0.2 %
- 0.4 %
- 10 %

• Fatal period -

- 4 hrs.
- 1 hrs.
- $\frac{1}{2}$ hrs.

• Management -

- Move to fresh air (Ventilated area).
- provide 100% oxygen. (O_2 support)
- Gastric lavage.
- Whole blood transfusion
- Antibiotics
- Benzodiazepines.

• Post mortem appearance -

- cherry red colorization of skin
- mucus membranes
- conjunctivae
- Nail beds
- Blood - pinkish red
- Haemorrhages
- pulmonary edema

• Medico legal aspect -

- Accidental.
- Suicidal.

• properties -

• Sources -

- Colourless.
- Odourless
- lighter
- Soluble in H_2O
- Incomplete Combustion
- Automobile Exhaust
- Tobacco smoke.

② Carbon dioxide :- CO_2

• Action - Asphyxiants

• Symptoms -

- Headache, dizziness, Nausea, Vomiting
- Confusion
- dyspnoea
- Cyanosis
- Muscular weakness.
- Visual disturbances.
- hypertension
- hyperthermia.
- Coma

• Fatal Dose -

- above 30% Concentration in blood.

• Fatal period -

- Not fixed.

• Management —

- Artificial respiration
- Oxygen should be given freely
- Cardiac stimulants are useful
- Supportive measures.

• Post mortem appearance —

- Marked Cyanosis
- Congestion
- Suffusion of eyes.
- dilation of pupils.
- Haemorrhages
- Blood — Dark fluid.
- Venous enlargement.

• Medico legal aspect —

- Accidental.
- Suicidal

• Properties —

- Colourless
- Odourless
- Heavy
- Solid form called 'dry snow'

• Sources —

- Combustion
- Respiration
- Decomposition of organic matter.

- Non-metallic poisons.

① Phosphorus -

- Action -

- Irritant

- Symptoms -

- Skin Contact Causes 2nd & 3rd degree burns.

- Ingestion Causes burning pain in throat & abdomen.

- Breath, Vomitus and faeces.

- Garlic like odour.

- Fatal Dose -

- 60-120 mg.

- Fatal Period -

- 24 hrs.

- Management -

- Gastric lavage activated charcoal.

- Demulscents.

- purgatives.

• Post mortem appearance -

- ~~Common~~ Body shows signs of jaundice & gastric.
- Smell of garlic.
- Mucous membranes of stomach & intestine are yellowish white in colour.

• Medico legal aspect -

- Accidental.

• Fatal Dose -

• Fatal Period -

• Management -

• Hydrocarbons

* kerosene - तारा तेल -

• Action - दुग्ध रक्त -

• Symptoms -

- kerosene taste.
- Burning throat.
- Diarrhoea.
- Pain in Colic.
- Breath, Vomit & urine smell like kerosene.
- ↓ Respiration.

• Fatal Dose -

- Ingestion > 10 ml.

• Fatal Period -

- Few hours.

• Treatment -

- Stomach wash.
- 250 ml of liquid paraffin orally.
- Saline cathartic.

• Post mortem Apparatus -

- Acute gastroenteritis
- Signs of Asphyxia
- kerosene odour of stomach.

• Medico legal aspect -

- Suicidal
- Accidental
- Homicidal

• Fatal Dose -

- Ingestion > 10 ml.

• Fatal Period -

- Few hours.

• Treatment -

- Stomach wash

- 250 ml of fluid orally

- Saline cathartics

* Agrochemical Poisoning *

* Organo-phosphorus Compounds *

• Properties -

- Used as pesticides & insecticides.
- Very lethal.
- Used as suicidal & homicidal purpose.

• Fatal dose -

Melathion - 60 gm.

TEPP - 100 mg

OMPA - 1750 mg

HETP - 350 mg

• Fatal period - 24 Hr

• Symptoms -

- Nausea & vomiting
- diarrhoea
- Sweating
- abdominal pain
- Lacrimation.
- Blurring of vision.
- Cramps.
- Coma.

• Causes of death

- Respiratory failure.
- Cerebral hypoxia
- Hyperthermia
- Hepatic & renal failure.

• Treatment -

- Remove contaminated clothing
- Wash the skin with H₂O & Soap.
- Artificial respiration.
- Antidote.
- Atropine.
- Oxygen ventilators.
- Supportive measures.
- Resuscitation.

• PMA -

- Insecticide like smell.
- Frothy mouth & Nostrils.
- Cyanosis.
- Constricted pupils.
- Congestion of organs.

• MLI -

- Accidental.
- Suicidal.
- Homicidal.

* Carbamate *

• feature. -

- used medically to reverse Neuromuscular blockage.
- To treat Myasthenia gravis & Alzheimer disease

• fatal dose -

~~5-6 gm~~

• fatal period - ~~1 Hr to Several Hrs.~~

• Signs & Symptoms. -

- Nausea
- Vomiting
- diarrhoea.
- abdominal pain
- headache
- dizziness.
- Short breath
- Coma.
- Respiratory problem

• Diagnosis -

- pinpoint pupils.
- weakness.
- Muscle Cramping.
- RBC cholinesterase level

• Treatment -

- Atropine.

- Benzodiazepines.

- Gastric lavage.

- Activated charcoal.

* Organo chlorine Compound *

Same all points.

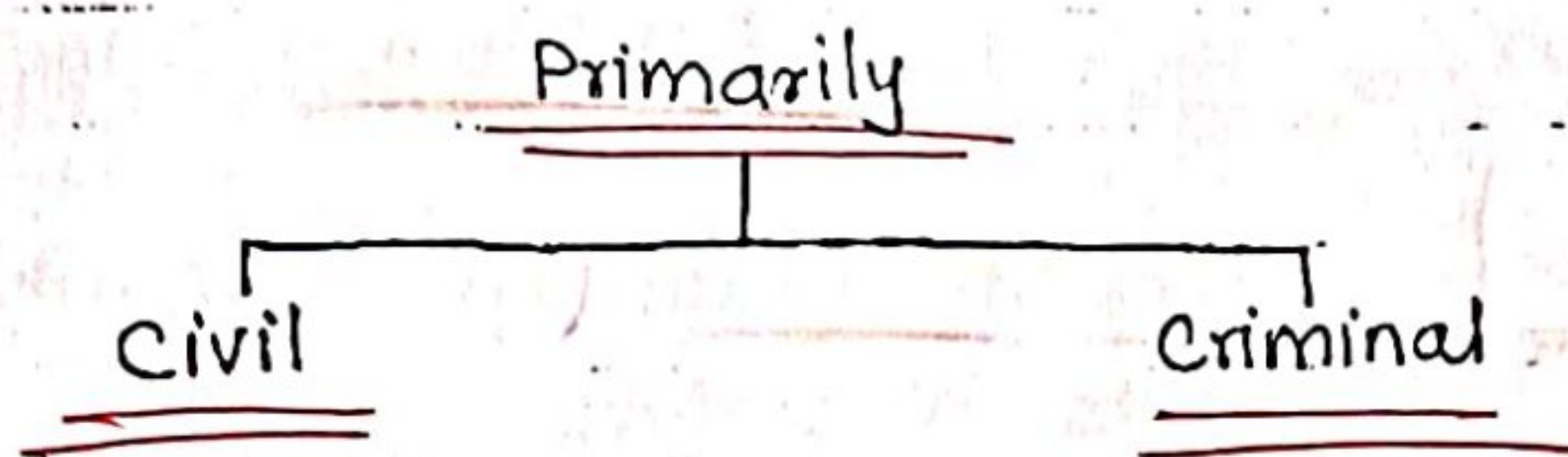
excepts

• fatal period - 1 Hr to Several Hrs.

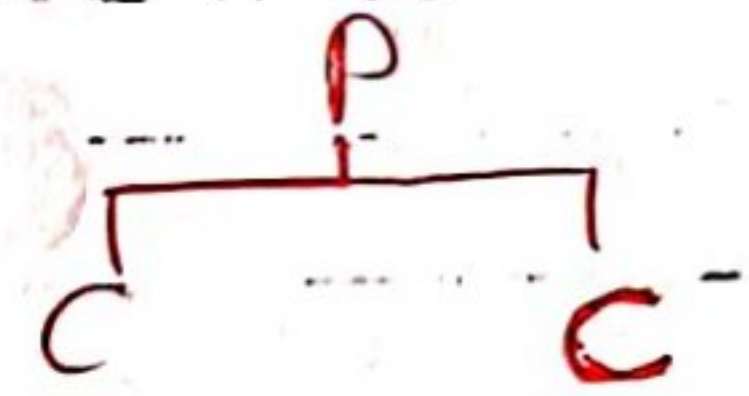
• fatal dose - 5-6 gms.

17.1 : COURTS AND THEIR POWERS

Types of courts :-



C
i
n
o
r



1. Civil :-

eg.. inheritance disputes

- compensation
- land disputes
- Family disputes
- divorce

Ld
Fd

L
C
D

2. Criminal courts:

Deals with crimes committed as per I.P.C

eg. Murder
Assault
suicide

M
A
S

ETC

3. Consumer courts:-

consumer disputes argument

4. Coroner's court

Was only in Mumbai

Dealt with inquest only

presently no coroner's court in India.

Major punishment authorised by law (sec 53 IPC)

MIP

- DS i. Death sentence (capital punishment)
- LI ii. Life imprisonment (approx-20 yrs)

CRIMINAL COURTS IN INDIA

5

1. Supreme Court :- Highest judicial tribunal in India (@ New Delhi)

power: - superintendence over all other courts in India.

2. High court :-

state level

H → SL

Power: - superintendence over the courts in that state.

Death sentence passed by session court is confirmed by High court.

DS → SC → H

3. District session court :-

District level

Death sentence passed should be confirmed by the high court.

4. Assistant session court :-

HQ

Also situated, at district Head quarters

can't award :- • Death sentence

C, A, LI

• Life imprisonment

• Imprisonment beyond 10 years.

5. Magistrate's courts:- (4)

Magistrate:-

E J S J

i. Executive:-

HC - Head - collector (District Magistrate)
office work only.
rarely - as magistrate.

eg. boundary disputes Bd
water supply disputes WSD

ii. Judicial Magistrate:-

Duty:- To record evidence & pass judgement.

class I - Chief Judicial Magistrate
 (CJM) = Metropolitan city
 ↓
 CCM

SDM = sub divisional Magistrate

others = JMFC

Judicial Magistrate First class

Powers (sec. 29 CrPc)

Judicial Mag

Imprisonment

Fine

class 1

CJM / CMM

7 yrs

No limit

SDM / JMFC / MM

3 yrs

RS. 5000

class II J.M

1 yrs

RS. 1000

1 year only.

iii. Special Magistrate:-

1 year

load

enquiry - in limit

dowry death - dying declaration

May be Judicial / Executive

1 I. For 1 year only

2 II. When regular magistrate cannot cope up with load of work.

3 III. Enquiry is to be finished within a particular time limit.

4 IV. In all cases of dowry death, dying declaration has to be recorded by special executive magistrate.

iv. Juvenile Magistrate:- $\left\{ \begin{array}{l} \text{B-16} \\ \text{G-18} \end{array} \right\} \frac{1986}{\text{B \& G}}$

usually ladies

guilty - sent to reformatories

Boy - (16) years

Girls - (18) years

As per Juvenile Justice Act - 1986

Testimony sworn
WITNESS साक्षीदार.

Expert

simple

Hostile

Defn:- Who give evidence on oath, in court.

sworn testimony

Hostile perjury

Types

i. simple / ordinary / common

ii. Expert / skilled

iii. Hostile / adverse / unfavourable



Doctors - acts as both simple S
expert E

I Simple:-

Gives witness who narrates in the court, what he has himself seen, heard, or percieved.

Direct knowledge rule or 1st hand knowledge rule.

II Expert:-

Witness who is skilled in some particular field → PF

e.g. Medical officer - MO
chemical analyser - CA
Finger print Expert - FE

Oath administration: - शपथ घेणे.

Even if person/witness taking lie

↓
crime of perjury
Perjury

S. IPC 193 193
tpm

III Hostile / adverse / unfavourable witness:-

witness - bad, animus
Hostile or unfavourable to his
own party.

Hostile - 101
perjury - 193

He may lie in court
such witness may be declared as -

Hostile

Sec IPS → 101

Re-exam
cross exam
direct

Recording of evidence:-

court question

1. Examination in chief

(direct examination)

2. cross examination

3. Re-examination

4. court question

Exam in chief

pt 1 - Leading questions are not permitted.

pt 2

cross exam

Leading questions are permitted.

acts as double edged sword.

pt 3 - Leading questions are not allowed.

Re-exam

PROCEDURE OF COURT

S O R

includes

1. summon
2. oath administration
3. Recording of evidence

under

SUMMON / SUBPOENA

penalty

summon = to call

sub = under

Poena = penalty

sec 174 IPC

sec 84 CrPC

● Summon defn.

Written in duplicate and signed by the presiding officer of court, compelling the attendance of a witness in the court, under penalty - witness

Sec 174 IPC & Sec 84 CrPC

● OATH Administration:-

solemn affirmation

In case, the witness has some religious scruples, (atheist) he is → R
required to make solemn affirmation

SA

cross examination acts as

" double edged sword "



● INQUEST (साक्षी)

In = in

quastus = to seek.

To seek into i.e. to look into
i.e. to find out.

● Defn:-

J or L

Judicial or legal enquiry into the cause of unnatural death.

● Types of Inquest:-

USA - Medical examiners system.

INDIA - depending upon officer who

Depending upon officer who

MES

DOW

* Types - (3)

1. CORONER'S INQUEST

2. POLICE INQUEST

3. MAGISTRATE

MPC

1. CORONER'S INQUEST

① Defn:- inquest carried out by the coroner.

coroner's inquest was prevalent only in Mumbai.
(stopped in Calcutta)
since 1988

② Was best inquest in India
stopped in Mumbai since July 26, 1999

③ Powers:-

① He can't impose punishment.

② only work is enquiry.

2. POLICE INQUEST

(As per sec. 174 Cr. P.C.)

① carried by Police officer not below the rank of head constable.

② Commonest inquest in India

③ "Panchanama" - with the help of two local respectable witness (known as panchas / panchayatdars)

With help → 2 L → witness

3. Magistrate Inquest:-

Sec. 176 Cr. P.C.

Defn:- Inquest carried out by an Executive magistrate.

In case of dowry death:-

• Death of married female < 30 years

• Death within

- 7 years of marriage -

MEDICAL EVIDENCE

① Evidence:- written documents and oral statements on oath, which help the court to decide a case

TYPES OF MEDICAL EVIDENCE - ③

1. Written / Documentary - 4

• Medical certificate
MC

• Medicolegal reports
MLR

Dying declaration
DD

Dying deposition
DD

2. Oral / Parole

Direct

Indirect

3. Circumstantial

sec 197 IPC
(+PL)

197

Issuing false certificates is punishable
under section 197 IPC.

DEATH CERTIFICATE

By RMP (Registered medical practitioners)
within 24 hours of death.

Dying deposition

(Not followed in India)

Dying declaration

defn:- deposition made by person
likely to die because of
some unnatural act.

• written or verbal
statement made by person
likely to die because of
some unnatural act done
on his body.

More important
To magistrate

Causes:-

ORAL EVIDENCE/ PAROLE

• defn:- evidence given orally (spoken words)
under oath in the court

• Types:- ②

Direct

Direct knowledge
of facts stated

Indirect (Hearsay)

Indirect knowledge i.e
known details from others

Identification• Defⁿ -

- The determination of the identity of a person whether living or dead is called as identification.

• Types -Complete

- it is absolute

Identification

Partial

- it is incomplete

• Identification process -

① A living person

1) for civil case -

- Disputed identity in case of divorce
- Disputed sex
- Missing person
- Lost memory patient

2) for Criminal case -

- identification of murder, criminal offenses, sexual offenses etc.

- Interchange of New born babies in hospital.

- Criminal abortion.

(B) In Dead person.

- Identification is required for the person who died in mass disaster.

• flood

• fire victim

• air crash

• bomb-blast injuries

- At least 2 identification marks should necessary for identification of M.L.E.

- Dead for evidence of identity is specialized task for multiprofessional team that includes.

• Forensic pathologist

• Forensic odontologist

• Anthropologist

• Radiologist

• Identification Criteria

↓
primary

• fingerprints

• DNA

• dental features

↓
Secondary

• deformity

• marks & Scars

• X-Ray.

• Data for identification -

- 1) Religion
- 2) Race
- 3) Sex
- 4) Age
- 5) Dactylography
- 6) Foot prints
- 7) Tatto marks
- 8) Scars.
- 9) Deformities.
- 10) Teeth
- 11) DNA typing.



Race -

- person self identification with one or more social group.
- It is biological grouping within human species

• Types -

On the basis of (clothes, Complexion, Eyes, Hairs, Physical Features, Teeth & skeletal)

1) Caucasians

2) Mongolian

3) Negro.

Features	Caucasians	Mongolian	Negro.
• Complexion	Fair	Yellowish	Black
• Eyes	Gray or blue	Black	Black
• Nose	Sharp	Flattened	Blunt
• Face	Small	large	Projected jaw
• Hard palate	Triangular	Large & flattened	Rectangular
• Upper Ex.	Normal	small	Large forearm
• lower Ex.	Normal	small	Large leg
• Hairs.	Straight, brown	Straight, black	Thick, curly, spiral

Religion -

- it can be a central part of one's identity.

Sex -

• Sex of a person can be determined by :

- physical Examination

- Microscopic Examination

- Hormon assay

- Gonadal biopsy

- DNA profiling

- Radiological Examination

FeaturesMalefemale

• Beard

Present

Absent

• Hair on pinna

Present

Absent

• Body-hairs

Grow over chest, limbs

Not Significant

• Breast

Rudimentary

Well developed

• Shoulder & hip

Shoulder Broader than hip.

Hip broader than shoulder

• Chest & abdomen

chest dimension more

Abdomen dim. more

• Waist

Not well defined

Well defined

• Ext. genitalia

Scrotum, testis & Penis

Labia, clitoris & Vagina

• Int. genitalia.

V.D, Seminal Vesicle, Prostate

Ovaries, F.T, uterus.

Age -

for the determination of age, the following data should be collected.

• Height & weight -

- In Case of foetus or newborn child, height & weight are of greater importance.

• Number of teeth -

2 Types.

1) Temporary teeth - (deciduous / milk teeth)

20

• incisor - 4

• Canines - 2

• Molars - 4

2) Permanent teeth -

32

• incisor - 4

• premolars - 4

• Canines - 2

• Molars - 6

Teeth

Temporary

Permanent

• Central Incisors	lower 6 th month	7 th yr
	Upper 7 th month	8 th yr

• Lateral incisors	lower 9 th month	9 th yr
	Upper 10 th month	9 th yr

- Canines 18th month 10-12 yr
- Ant. Premolars Absent 10-12 yr
- Post. Premolars Absent 10-12 yr
- First molars 12th month 6-7 yr
- Second molars 2nd yr 12-14 yr
- Third molars Absent 16-25 yr

• Examination of lower jaw:-

A lower jaw has 2 angles.

a) Medico legal angle -

- children - obtuse
- Adults - Right
- old age - obtuse

b) Anatomical angle - It determines the sex.

- Stage of ossification of bone & epiphysis-diaphyseal union of long bones.

- X ray is one of the most important factors for the purpose of determination of age.

- It helps to examine development of union betn diaphysis & epiphysis of long bones & ossification of bones

Some other signs for determination of age are:

- Hair in pubic region or axilla.
- gray hairs
- Moustache & beard.
- wrinkles on the face.
- Voice
- Menstruation

M. L. I of age -

- Criminal responsibility.
- Marriage contract
- kidnapping
- Rape
- Criminal abortion.
- Infanticide

(NK) *

Dactylography

- it is derived from greek word.

• daktylose - finger

• graphein - to write

- The Scientific study of fingerprints is known as dactylography.

- It is a method of identification based on unique epidermal ridge pattern on the tips of fingers.

• Use & importance -

- it is used as technique to detect crime
- It is most accurate & unfailing method of positive identification.
- No Two individual will have identical fingerprints.
- It is better method of identification than DNA profiling.
- DNA profiling would be same in identical twins but fingerprints are different.
- fingerprints remain permanent throughout life.

OK ✓

Scars -

- it is the formation of fibrous tissue as an outcome of the repair process after an injury.
- It has great value in identification of a person.
- Following Factors of a Scar should be examined.

• Anatomical Situation

• size

• shape

• Colour

• Tenderness

* Foot prints -

- just like a finger print.
- Foot also gives an impression called foot print.
- Which is useful in identification.
- While examining foot prints, deformities such as web feet, flat feet, etc. help in identification of a person.

①✓* Tattoo - marks

- Design, Colour, Size & exact anatomical situation of tattoo should be examined.
- A tattoo may indicate towards the name of person or a loved person.
- It may give suggestion about person language.
- It may give a clue regarding race or religion.

* Deformities

- Deformities are a burden for the individual, but they are useful for the purpose of identification.

Types - 2

- | | |
|-------------------|---------------------|
| ↓ | ↓ |
| <u>Congenital</u> | <u>Acquired</u> |
| - cleft palate | - Surgical wounds. |
| - irregular teeth | - Amputation |
| - moles | - filling of teeth. |
| - flat feet | |
| - web feet | |

DNA Profiling -

- Also called DNA Fingerprinting.
- it is the process of determining an individual's DNA characteristics.
- it is a Forensic technique in Criminal investigation.
- 99.9% of human DNA Sequence are the same in every person, The DNA is different that it is possible to distinguish one individual from another, unless they are monozygotic (identical) twins.

Death -
 • Defn of - cessation
 of all biological living
 functions.
 - death is the end
 of life

Thanatology

- Branch of science which deals with study of death in all aspects.

Death denotes death of human being.

Defn of Death

Process in which cellular metabolic process in diff. tissue and organs cease to function at diff. rates.

It is cessation of life or cessation to exist.

Types

✓ Somatic death (systemic / clinical death) ✓ Molecular death (cellular death)

①

SOMATIC DEATH

✓ complete and Irreversible stoppage of circulatory, respiration and brain function (Bishop's Triad of life)

✓ due to stopped aerobic processes.

✓ Somatic death is associated with immediate signs of death.

✓ Pulse, respiration, reflexes, etc. are absent.

✓ Permanent and complete cessation of Functⁿ of Brain and Flat EEG with no response to external stimuli i.e. Brain death.

✓ Permanent and complete cessation of Functⁿ of heart and Flat ECG

✓ Permanent and complete cessation of Functⁿ of Lungs

• In somatic death,

✓ Muscles and pupils respond against external stimuli.

• Duration of body cells die -

i) Skin and Bone

die days after somatic death

ii) White Blood cells

- 12 hrs. after cardiac arrest.

iii) Cortical neuron.

- 3-7 minutes.

* Clinical criteria for diagnosis of Brain death -

1. Coma → Unresponsiveness to all formal stimuli.

2. Absent of Brainstem reflexes - pupillary reflex
corneal reflex

pharyngeal & tracheal reflex.

3. Signs of Brain stem destruction - Apnoea.

2.

MOLECULAR DEATH (cellular death)

- occurs after somatic death.

- death of all individual cells.

- occurs even when aerobic processes stop, due to non-availability of ATP.

• Features of this stage -

✓ Muscles do not respond to stimuli

✓ Pupils do not respond to stimuli or drugs

✓ There are early signs and late signs of death.

Examples:- primary relaxation

Rigor mortis.

changes in skin and eye

Early signs

cooling of body

changes in muscles

post-mortem lividity

Mummification.

Late signs

Decomposition
(bacterial putrefaction)

Adipocere formation

• Molecular death of various organs occur at diff. intervals -

Organ

Interval

1) Nervous Tissue 15 min.

2) Liver 15 min.

3) Heart 45 min.

4) Kidney 1 hr.

5) Muscles 3 hr.

6) Cornea 6 hr.

7) Blood 6 hr.

• Medicolegal Imp. of death.

✓ Declaration of death.

✓ Certification of death

✓ Disposal of body

✓ Organ transplantation.

5) Presumption of Death.

the physiological or biochemical

that directly leads to death.

Abnormal physiological state that pertained at

Syncope

Coma

MOD

Asphyxia

or Coma -

unconscious state of person characterized by complete insensibility.

• Symptoms -

No any response to any sort of stimuli.

• Causes -

✓ Head injuries

✓ Intracranial Haemorrhage

✓ Encephalitis

✓ meningitis

- Diabetic ketoacidosis.

- Uraemic coma

- Hepatic encephalopathy

✓ Opium/Barbiturate poisoning

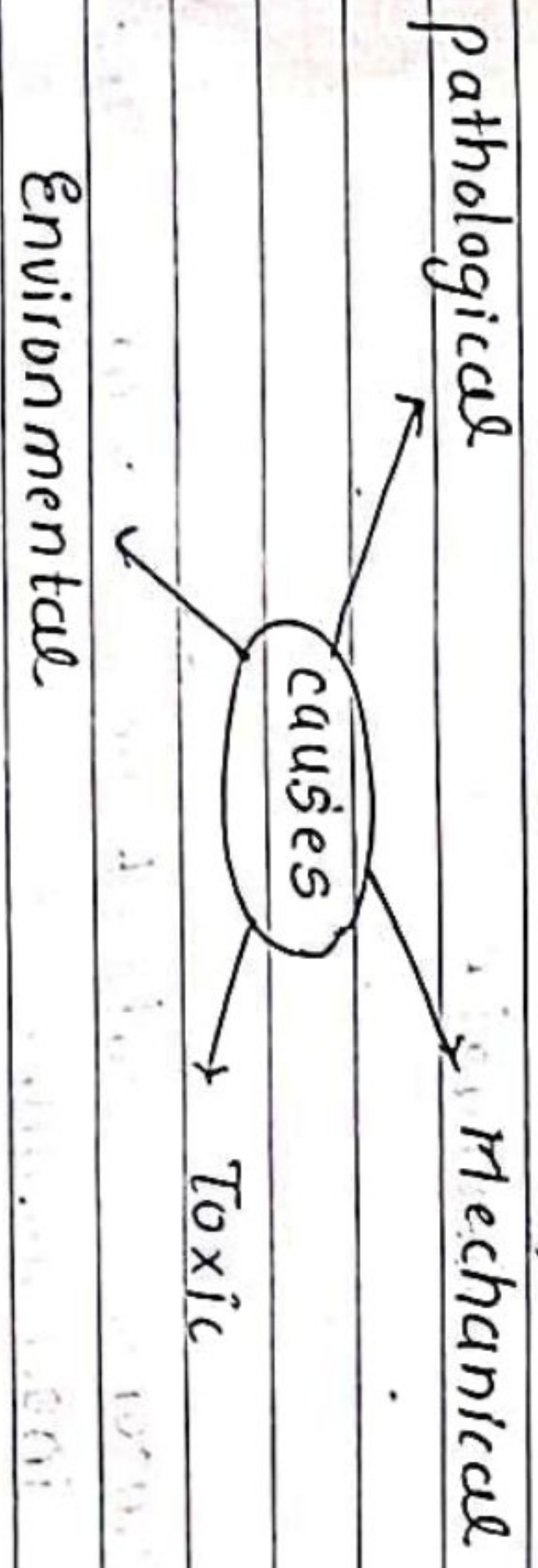
✓ Alcohol intoxication.

✓ Epilepsy

- Heat stroke

2. Asphyxia -

- State in living organism in which there is acute lack of oxy. available for cell metabolism associated with inability of body to eliminate excess of CO₂.



(a) Mechanical -

- Hanging
- Strangulation
- Throttling
- drowning
- choking

(b) Toxic -

- Opium
- CO
- Cyanide poisoning

(c) Pathological -

- Consolidation
- pleural effusion,

(d) Environmental -

- High Altitude

3) Syncope -

Results from stoppage of functioning of Heart with consequent cessation of Circulation.

- Blurred vision
- Fatigue
- Nausea
- Sweating
- Weakness
- Dizziness

Symptoms -

Sudden loss of consciousness. Loss of Consciousness with postural collapse due to acute ↓ in cerebral Blood Flow. Irregular or Rapid heartbeat.

Causes -

- Myocardial Infarction
- Stenosis
- Pulmonary hypertension
- Anaemia, etc.
- Sudden drop

Manner of Death -

May / design in which cause of death comes into being

Classification

Natural

Unnatural

- Homicide
- Accident
- Suicide.

• Suspended Animation / Sudden death -

- condn of living body in which all activities such as movement, Respiration and beating of heart are temporarily suspended giving the appearance of death accn to clinical diagnosis.

- condn lasts from few sec. to $1/2$ hr. or more.

- It may be found in -

- Electrocution
- Drowning
- Cholera
- After anaesthesia
- Shock
- Stroke
- Cerebral Concussion
- Narcotic poisoning
- Newborn infants.
- Yogis (voluntary)

• Postmortem Changes after death -

help us in estimation of approx. Time since death.

Late changes after death.

PCAD

Immediate changes after death.

Early changes after death

1) Immediate Changes After death -

- stoppage of Functn of Nervous sys.
- stoppage of Respiration.
- stoppage of Circulation.

2) Early changes after death.

- changes in eye
- changes in skin
- Cooling of body
- post-mortem lividity
- Rigor mortis
- Changes in muscle.
- Changes in body fluid.

3) Late changes After death.

- putrefaction / decomposition.
- Adipocere
- Mummification

SIGNS OF DEATH. -

Immediate sign

Early signs

Late signs

due to somatic death

↓ due to molecular death

↓ decomposition of cellular death after molecular death.

Immediate sign of death.

Permanent and complete cessation of Functn of lung.

Perm. and comp. cess. of Functn of Heart and Flat ECG and Perm. and comp. cess. of Functn of Brain Functn and Flat ECG

Permanent & Complete Cessation of Functn of Lung

A] perm. and comp. cess. of Functn of Lung -

• comp. cessn of Respirn for more than 5 min. ✓
i.e. - No Breath sound on chest or larynx for 5 min.

• Respirn can stop for short duration without death

Eg - Voluntarily ✓
Drawing ✓

• Tests For confirming cessn of Respirn -

Winslow's Test → Tests → Feather Test

Mirror Test

1) Feather Test - No movement of Feather if held in front of Nose.

2) Mirror Test - Mirror held in front of nose doesn't show vapours / Blurings.

3) Winslow's Test - No movement of Reflection of light shown on mirror / surface water in bowl, kept on d.

B] perm. and comp. cessn of Functn of Heart and

Flat ECG - complete stoppage of Heart beat for more than 3 min with Flat ECG. ✓

• Tests :-

Finger nail Test

Magnus Test (Ligature test)

Tests

Teard's test

Diaphanous Test

Transillumination test

1) Magnus Test (Ligature Test)

Fingers fail to show congestion and swelling to a ligature applied on their base.

2) Diaphanous Test (Transillumination Test)

Failure to show redness in finger web spaces on transillumination from behind.

3) Icard's Test -

Failure to produce yellowish green discoloration of skin on injection of fluorescein dye.

4) Finger nail Test -

No blanching and filling of blood on applying pressure and release of pressure.

c) perm. and comp. cessn of function of brain function and Flat EEG

- comp. cessn of function which leads to →
- insensibility
- unresponsiveness to external stimuli
- loss of muscle tone
- Flat EEG.

* 2) Early signs of Death

↓ changes in skin ↓ changes in Algor mortis ↓ Livor Mortis ↓ Rigor Mortis

1) Changes in skin -

- ✓ a) Loss of Translucency and elasticity of skin
- ✓ b) Skin become greyish white.
- ✓ c) Loss of muscle tone
- ✓ d) Flat E. Lips Become dry hard and brownish Brownish.

2) Changes in eyes - are absent (eradicated)

- a) Abolition of pupillary and corneal reflexes.
- b) Cornea become hard and opaque.
- c) drop in level of potassium, ascorbic acid and lactic acid in vitreous Humour

3) Algor Mortis [cooling of body / Chill of Death]

• After death, dead body behaves like an inert sub. and therefore, if atmosphere Temp. is low, body loses its heat by conduction, convection, radiation and evaporation, so as to attain the atmospheric Temp. i.e body cools.

No cooling of dead body occurs if atmospheric Temp. is higher than that of body.

Cooling of body starts $1/2$ to 1 hr. after death.

Cooling is faster in initial period, when Temp. diff. b/w body and Atmosphere is maximum.

a) First 30-45 min $\rightarrow$ No Temp. Fall.

b) First 1-6 hrs $\rightarrow 1.5 - 2.0^\circ\text{C/hr.}$

c) 6-12 hrs $\rightarrow 0.9 - 1.20^\circ\text{C/hr.}$

d) After 12 hrs $\rightarrow 0.4 - 0.60^\circ\text{C/hr.}$

• Factors affecting cooling of body -

1. DIFF. in Temp. b/w body and medium -
Fall is rapid when diff. is great.

2. Build of cadaver - heat loss is proportional to weight of body and to its surface area.

- children and old people cool more rapidly than adult.

3. Physique of cadaver - fat bodies cool slowly than lean bodies.
(Fat is bad conductor)

4. Environment of Body -

In well-ventilated room $\rightarrow$ body cools rapidly

Humid Atmosphere $\rightarrow$ body cools slowly

cold water $\rightarrow$ "

Running water $\rightarrow$ "

fresh / sea water $\rightarrow$ "

* Sewage water $\rightarrow$ cools slowly.

5. Covering around body -

Shed clothed body $\rightarrow$ cool slowly.

(Shed clothes are bad conductor of heat)

* Medical Temp. of Algor mortis -

i) It is a sign of death.

ii) Time since death may be determined and

determine the time since death during First

24 hours

2nd 24 hours

Post - After, mortem - death, color - heat

postmortem colority

- Normally, Temp falls after death. But in some situation, for initial 2-3 hours the dead body may gain heat i.e. postmortem colority.

This may be seen in -

- i) Due to disturbed heat regulation - sun stroke.
- ii) Due to heat production by muscular activity -

Tetanus, Asphyxial death.

- iii) Acute bacterial or viral infections -

pneumonia
Typhoid

nephritis

Meningitis

Cholera etc.

- iv) Very high atmospheric Temp.

Examples - Heat stroke

- Death due to heat or Flammable burns

- Death due to lightning or electric current

- Asphyxial death.

- poisons eg - Alcohol, carbon monoxide -

- Viral infections - eg - rabies.

Liver mortis

(Post mortem lividity)

✓ Darkening of death.

- It refers to discoloration of skin and internal organs after death due to accumulation of fluid blood in toneless capillaries and small veins of dependent part of body.

- As dead body behaves like an inert sub. therefore there is gravitational flow of blood to dependent parts of body, causing stagnation of blood in toneless capillaries and small veins causing bluish purple staining of these parts.

Site of P.M. Lividity.

- A] depends on position of body after death -

✓ 1] supine body - P.M. seen on post. aspect of body.

✓ 2] Hanging - PT staining seen on all around the distal half of upper and lower limb.

✓ 3] Drowning - head being the heaviest part lividity seen all around the upper half of body.

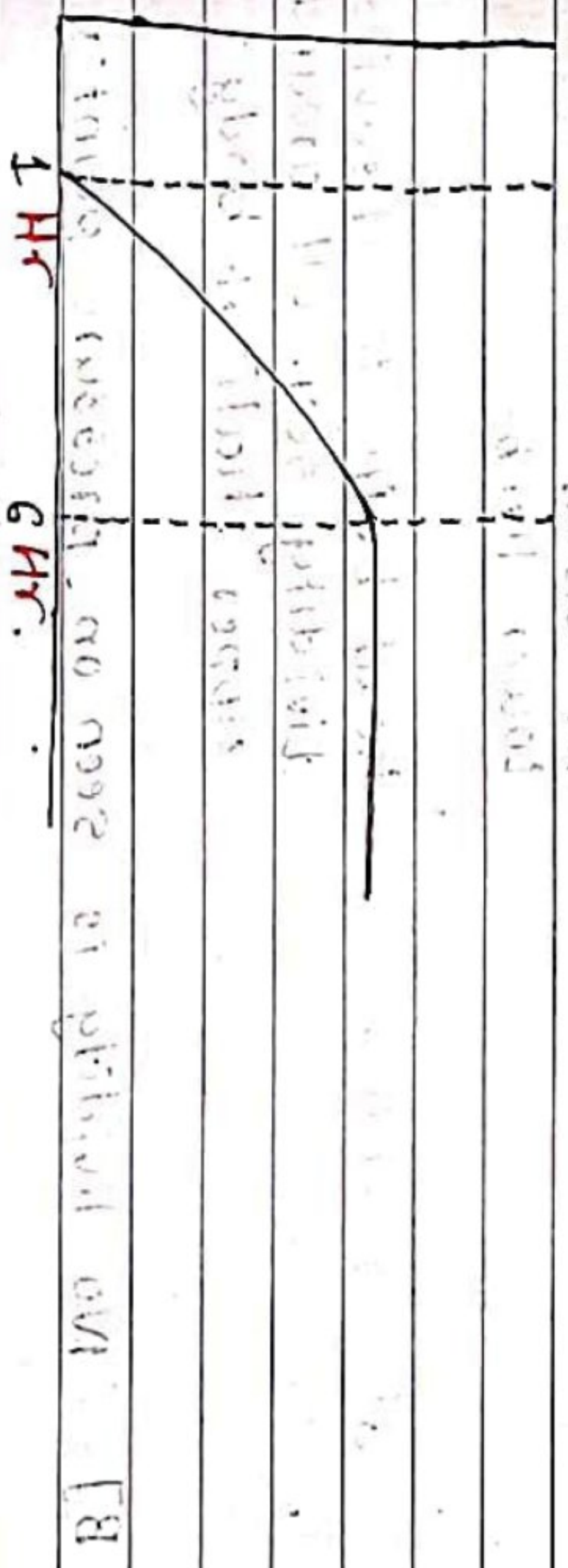
B] No lividity is seen on pressure point of body.

A] In supine body - No lividity seen on occipital area, shoulder, buttocks and calf these areas become flattened.

- b) Also no lividity occurs on parts tightly tied with belt, neck tie, waist band or brassiers and area is seen as stripes or bands, called as vibices.
- c) Haemorrhages or haemorrhagic blisters may appear at site of P.M Lividity.

• Time Required For P.M. Staining -

- 1) P.M.L starts appearing after about 1 hour of death, as small discoloured patches.
- 2) During 3-6 hrs, these patches enlarged and forms large area of staining.
- 3) After 6 hrs, P.M.L becomes Fixed (may be delayed in anaemic)



• Time period of lividity is 1-2 hrs. In case of anaemia, lividity is delayed.

• Colour of P.M Lividity:-

Lividity is → Bluish pink to light red
 After some time → Bluish purple

Intensity of colour depends on amount of reduced Hb.

Lividity seen better in fair.

- * In certain condn, colour of lividity may be typical
 - 1) In carbon monoxide poisoning - bright cherry red.
 - 2) In burns and cold - Bright Red
 - 3) In cyanide poisoning - pink
 - 4) In opium poisoning - Almost black
 - 5) In Haemorrhage/Anaemia - pale purple

• Differential diagnosis:-

- 1) PML can be confused with -
- 2) congestion of viscera.
- 3) Bruise/contusion.

• Medical Legal Imp. of PMI -

- a) It is a sign of death.
- b) Helps us to know time since death.
- c) Helps us to know position or posture of dead body.

Also known as Cadaveric rigidity.

Rigor mortis → rigidity.
mortalis - of death

- Rigor mortis is stiffening of muscle after death along with shortening of muscle fibres.

When rigor mortis developed completely, the body joints become stiff with flexion attitude of upper limb muscles.

Appearance of Rigor mortis indicates death of individual cells (i.e. molecular death has occurred).

* Onset of Rigor mortis -

- Occurs in all sort of muscles i.e. striated, smooth and cardiac muscles.
- occurs earlier in involuntary muscle than voluntary muscle.

In summer season, rigor mortis first appear in cardiac muscle at end of 1st hour after death.

- In case of voluntary muscle, 1st appears in muscle of eye lids.

Rigidity spreads gradually within next few hours chronologically, in muscles of Face, neck, Jaw, Trunk, upper limbs (from shoulder to hand) & lower limb (from hip to foot).

- Appears lastly in small muscles of hand and feet.

• Disappearance of Rigor mortis -

- disappears 1st in muscles of face, neck, gluteo, trunk, upper limbs and lower limbs and lastly in small muscles of hand and feet.

• March of Rigor / Rule of 12 -

- Generally considered that it takes about 12 hr. after death to develop rigor mortis, remains for another 12 hours and takes about 12 hrs to pass off.

• Factors affecting Rigor mortis -

- 1) physique of the person - In thin built with weak musculature rigor appears early and passes off early.

2) Season -

- In summer season with high atmospheric Temp. → appears early and passes off early.

3) Causes of Death -

• Causes

- cancer, Uremia - early onset and passes off early.

Rigor mortis

- Asphyxia, cold env. - Delayed onset and passes off early.

- hydrocyanic acid poisoning - Rapid onset but lasts longer.

4) Condition of muscles, before death -

- In relaxed muscle rigor occurs late, In exhausted muscle → occurs early and passes off early.

• Medical legal Imp.

- 1) It is a sign of Death.
- 2) Time since death can be estimated.
- 3) Indicates position of body.
- 4) Differential diagnosis with Cadaveric spasm, heat stiffening, cold stiffening.

• Cadaveric Spasm (instant rigor) sudden stiffening

- State where muscles / group of muscle, instead of going under primary relaxation after death go into sudden state of stiffening.

- Eg - In case of drowning death, The hands / grasps / mud / sand may be tightly grasped in hand.

- In case of suicide by shooting with firearm, the weapon may be firmly grasped in hand.

- condⁿ commonly involves only a group of muscles of hand or limb but rarely whole body may be involved.

• Diff. Btw. rigor mortis and cadaveric spasm -

Features	Rigor mortis	Cadaveric spasm
Time of onset	1-2 hr after death	Immediate
Muscle involved	All muscles involved gradually	Usually group of muscle (like hand) involved
Degree of stiffness	Moderate	Strong
Predisposing Factor	None disturbance	Excitement, Fear, emotional
Mechanism	Breakdown of ATP	Not known
Help to know	Time since death	Manner of death.

• Medicolegal Imp. -

- 1) Indicate that person was alive at time of instantaneous rigor.
- 2) Presence of some object like knife, button, Torn cloth helpful in investigation to relate with crime.

* Late signs -

(Adipis - soft Fat, cera - wax)

* - Adipocere - *

- Modified form of decomposition characterized by form of soft waxy, material in dead body.
- Green in bodies found in wet condⁿ
- Adipocere → pale, rancid, greasy semi-fluid material with a most unpleasant sm
- Fully formed → grey, firm, waxy.

↑
Early stages formation.

* - Mummification - *

- modified form of decomposition characterized by -
drying desiccations of tissues under condⁿ of high environmental Temp, low humidity and good ventilation
↓
in which body tissues are converted into dark, hard and shrivelled appearance.

- Natural in dry climates.

* Decomposition *

- Autolysis (due to body enzymes)
- Putrefaction (due to bacterial normal flora)

1st part of body that will undergo putrefaction is
Crum

Medicolegal Autopsy and Exhumation -

Autopsy -

- Also known as post-mortem examn / Autopsicadaverium.

- Surgical procedure by dissection to determine the cause, mode and manner of death.
- usually performed by specialized medical doctors.

Purpose -

- a) To know manner of death.
- (Determine if death was natural or unnatural and Injury source)

- b) post mortem interval
- c) Retain relevant organs.
- d) If it is an infant, determine live birth and viability.

Types → (4)

1) Medico-legal / Forensic / coroner's autopsies.

2) Medical / Clinical / pathological autopsies.

3) Anatomical / Academic autopsy.

4) Virtual / medical imaging autopsy.

1) Medicolegal / Forensic / Coroner's autopsies -

- They are generally performed, as prescribed by applicable law in cases of → Violent sudden deaths

deaths without medical assistance deaths during surgical procedure.

2) Medical / Clinical / pathological autopsy -

- performed to diagnose a particular disease or for research purpose.

Eg - material for infectious disease Testing can be collected during autopsy.

3) Anatomical / Academic Autopsy -

- performed by students of anatomy for study purpose only.

4) Virtual / medical imaging Autopsy -

- utilizing imaging Technology only. like -

MRI (magnetic resonance imaging)

CT (computer Tomography)

Exhumation

- An act of unearthing a buried individual.
- performed for need of medicolegal investigations

Aim

Normally conducted for medicolegal purposes in order to help the judicial sys. to establish the cause of death / Identify an individual.

ASPHYXIAL DEATH

— Asphyxia —

• Defⁿ -

- Interference with respⁿ / due to lack of O_2 in respired air due to which tissue or organ is deprived of O_2 and failure to eliminate CO_2 causing unconsciousness or death

- Asphyxial death is diagnosed by Triads

- 1) Cyanosis
- 2) congestion
- 3) Petechial Hemorrhages.

causes

- 1) Hanging
- 2) Strangulation
- 3) Suffocation
- 4) Drowning

— Hanging —

• Introduction -

- form of Asphyxia

- Caused by suspension of body by a ligature that encircles the neck, the constricting force being weight of the body.

• Types of Hanging -

A] Based on degree of suspension -

- Constricting force is W_g of head.

complete hanging

Incomplete hanging

- Body - fully suspended.
- No part of body touches ground.
- constricting force is W_g of body

- Partial Suspension
- Some body part touching ground.
- constricting force is W_g of head

B] Based on knot of ligature -



Typical Hanging

Ligature runs from the midline above thyroid cartilage

Any variation from typical knot site

Most common site of knot - near one side of mastoid process / mandible

Symmetrically upward on both side of neck to occipital region

Point on suspension being on occiput.

Causes of death in Hanging

1] Cerebral ischemia and anoxia -

Due to compression of Carotid artery.
Requires 3-5 kg weight of suspension.

2] Cerebral Congestion -

Compression of Jugular Vein
Requires 2 kg weight of suspension.

3] Asphyxia -

Compression of airways.
Requires 15 kg weight

4] Neurogenic Shock

5] Fracture dislocation - with damage to spinal cord and Brainstem.

Combined asphyxia and Cerebral Venous Congestion is the most common causes of death.

Imp. postmortem findings -

Ligature mark → above thyroid cartilage, incompletely bilaterally symmetrical

directed obliquely upward extending to the angle of mandible then mastoid and finally occipital protuberances.

Under ligature mark → dry, white, glistening pad of occipital region

• Dribbling of saliva from angle of mouth.

⊙ Ligature mark -

→ Ligature mark is well-known pressure mark on neck underneath a ligature

→ Common injury in hanging and strangulation

→ Ligature mark depends upon types of suspension and types of knot

* Types of Suspension

Typical complete hanging

Above thyroid ✓
 Oblique ✓
 Bilateral symmetrical ✓
 Incomplete ✓
 Cartilage ✓

Partial hanging → Ligature → Below thyroid cartilage mark and Transverse

* Types of Knot

Fixed Noose

- Rope is tied round the neck and knotted to form fix knot.
 - one end of rope is passed through loop made from other end.

Running Noose

most common knot

ligature → Horizontal mark

ligature mark V-shaped.

* Judicial Hanging :-

- India → legal death sentence is carried out by hanging the criminal.

- placement of knot beneath the chin (effective)

- person is allowed to drop for 5-7 metres A/c to Wt, age, build of person.

* Lynching :-

- Homicidal hanging

- Suspect is accused or enemy is killed by group of people hanged by a rope from a tree by mob.

- More common related to smuggling of cows or their milk / sexual crimes or to take revenge.

* Sexual Asphyxia (Automatic hanging)

- Peculiar type of hanging - where Victims are usually young males with some form of abnormal sexual behaviour, usually masochism and transvestism.

- partial asphyxia → cerebral disturbance with feeling of sexual gratification.

STRANGULATION

Defn -

Mode of violent asphyxial death in which the entry of air to the lungs is prevented by compression of Neck by ligature or some other method, but without suspension of body, so that force constricting the neck is external force applied exogenous force.

Types -

Depending upon the method used to constrict the Neck

Ligature strangulation

Throttling (manual strangling)

Bandsola

Mugging

Garroting

Strangulation with knee / foot

1) Ligature Strangulation

Neck is compressed by ligature of which usually multiple rounds are given and no knot is tied.

Force is applied on ends of ligature to cause compression of Neck, therefore asphyxial and finally death.

T B M G S
B G N K S T

27 Throttling

- Neck is compressed by one or both the hands

also known as manual strangling

— there is compression of neck by one or both the hands.

Palmar Strangulation $\Rightarrow$ When neck is compressed by 2 palms held at almost right angle to each other.

Other.

In case of partial compression of Neck, there is =

- Clenching of hands
- Convulsions

✓ Congesting and cyanosis of face and head

✓ Visual and auditory hallucinations

✓ Bleeding from mouth, nose and ears.

• POST-MORTEM APPEARANCE -

→ local

External

Internal

→ General

External

Internal

→ signs of struggle and Violence

A] Local Ext. PM Appearance -

→ depends upon Method of Strangulation

1. Finding "the ligature Strangulation"

✓ Ligature mark present on or below thyroid

✓ LM $\Rightarrow$ Horizontal, complete and continuous present all over neck.

Multiple marks are present as multiple rounds of ligature are made round the Neck and it is complete as usually, no knot is tied.

5) Mugging

comp. of Neck by elbow or in bend of elbow.

Strangulation by knee / Foot

Compression of Neck (CON)

• Signs and Symptoms -

Hemoidal and $\therefore$ the amount of force applied to

constrict the Neck is excessive

$\therefore$ Much more violent Mode of asphyxia than hanging.

usually person suddenly loses powers & become unconscious and soon dies.

Appearance of Lig. Mark →

- a) Colour → yellowish brown but it later black
- b) Margins → show frank bleeding
- c) Surrounding skin → show multiple haemorrhages
- d) Finding in Throttling (Manual Stranglⁿ)
 - ✓ on neck there are injuries due to finger tips and nails.
 - Injuries due to thumb are seen better as compared to fingers.
 - ✓ Throttling with 2 hand
 - ✓ Throttling with both hands

3) Bandola

- ✓ Horizontal injury mark in form of abrasion or contusion on or below thyroid.

- If 2 sticks are used → mark of injury on posterior aspect of Neck

4. Garroting.

- ✓ U shaped ligature mark, present as abrasion or contusion on ant. surface

5. Mugging and Stranglⁿ with foot / knee

- ✓ No typical injuries on neck
 - May be multiple, large, Vague contusions on anterior part of Neck

B] Local Internal PM Appearance.

- Injuries to Neck structure is more severe in stranglⁿ
- a) In all types except throttling - under the mark, area is haemorrhage.
- b) In all types except throttling - laceration of muscles

In throttling → muscles are congested.

→ Tonsils congested
→ Larynx, pharynx, epiglottis and oesophagus congested.

petechial Haemorrhages.

• General & PM Findings -

- 1. No. of bones of head.
- 2. No. Stretching of Neck
- 3. Face is deeply congested with multiple petechial haemorrhages
- 4. Deep congested on face, lips, ears, tongue, nose and nails
- 5. Tongue is protruded out, bitten, black and swollen.

protruded

• General Internal PM Findings -

- 1. Respiratory passage contains bloody froth.
- 2. Lungs → a) are congested.
b) Exude bloody froth on squeezing the cut section
- 3. Right chambers of heart are full.
- 4. Blood is dark colour.

• Signs of Struggle and Violence -

- 1. Clothes may be torn.
- 2. There may be evidence of sexual assault on a female victim.
- 3. After killing by Strangulation, body may be burnt.

• MEDICO-LEGAL ASPECT -

- In case of death due to strangulation, there is injury on neck, depending upon type of strangulation.

- Suicidal Strangulation → Rare

- Homicidal Strangulation → Common.

- Accidental Strangulation →

• occur in - In New born by umbilical cord.

- In children, while playing by strings of Toys.

- Suddenly holding neck of other persons.

* DIFF. Btwn. Hanging and Strangulation :-

[HANGING]

[STRANGULATION]

- There is suspension of body
- No suspension.
- Compression of Neck by a ligature
- comp. of Neck by ligature, hands, sticks, etc.
- knot usually present.
- Usually absent
- Mark usually single
- usually multiple marks
- Mark → yellowish brown
- Black in colour

SUFFOCATION

• Defn -

Mode of violent asphyxial death in which entry of air into lungs is prevented by means other than compression of Neck and drowning.

• Types -

→ Smothering

→ Gagging

→ Choking

→ Crush asphyxia

→ Bandsola

→ Burking

→ Inrespirable gases

→ Burying live

CO_2
 CS_2
 CS

1) Smothering

Type of Suffocating in which entry of air to lungs is prevented by closure of Nose and mouth.

It may be → ✓ Manual Smothering - closing nose and mouth with hands.

✓ Closure of Nose and mouth by piece of pillow cloth.

c) Child born with CHA

d) Plastic bag tied on head to cause asphyxia and so sexual stimulation.

2) Gogging

- Suffocation by blocking of oropharyngeal area, may be by piece of cloth or even by thumb.
- Item blocking is referred as gag.

3) Choking

- accidental suffocation by obstruction of Respiratory passage [glottis, larynx, trachea, bronchi]

Caused by -

- 1) Inhaled foreign body → fish thorn, piece of meat, seed, coin etc.
- 2) Accidental Choking

* Cafe coronary → sudden death while eating food, due to choking of larynx.

4) Thrush Asphyxia (Traumatic Asphyxia)

It refers to crushing injury to chest wall.

It is -

penetrating Non-penetrating

Steering wheel

Injury in thoracic injury seen in such injury

5) Bansdola

- compression of chest with 1 or 2 sticks

6) Burking - it is combination of smothering & Traumatic asphyxia

Method used by Mr. Burk and Mr. Hare who used to kill people for selling dead bodies to Edinburgh Medical School.

✓ Burk. use to sit on chest of inebriated person, smother with his left hand, and push the chin with his right hand.

- Hare holding the feet of Victim used to move him in room, till he was dead.

7) Inhaln of Irrespirable gases -

- i) Hypoxia at high altitude
- ii) Smoke from burnt articles.

8) Burying alive

Smothering occurs from a combn of smothering, gagging, choking and crush asphyxia.

• Cause of Death -

- 1) Asphyxia
- 2) Venous congestion
- 3) Neurogenic shock
- 4) Injury to thoracic viscera

Fatal Period - May vary from sudden death to death

within 4-5 min.

• POST-MORTEM APPEARANCE -

Local ← External General ← Internal

A) Local Ext. PM Findings -

→ depends upon Type of suffocation.

1) In Smothering -

- classical in manual smothering.

2) Choking -

- on examnⁿ of oral cavity, gag is covered!
at times there may be mild bleeding.

3) Choking -

- No local ext. findings.

4) Crush asphyxia, Bandola and Burking

- There are abrasions, contusions / lacerations on chest, back of compression.

5) Inspirable gases -

- No ext. findings.

6) In burying alive -

- Sand / mud is seen on clothes, hair, body, nose, mouth etc.

Medico legal aspects of suffocation -

death due to suffⁿ is usually accidental, sometime homicidal and very rarely suicidal.

B) Local Internal PM Findings -

1) Smothering -

- Findings restricted to oral cavity only seen on ext. examⁿ.

2) Choking -

a) Item causing obstrⁿ of Resp. passage is discovered.
b) Area shows inflammⁿ and edema.
c) Slight Bleeding at site of choking.

3) In crush asphyxia, bandola and burking -

a) laceration of muscles of chest and back
b) large haemorrhages in muscles.

4) Burying alive -

- Sand or mud is seen in Resp. passage, oesophagus and stomach.

C) General Ext. PM Findings -

- more clear in smothering and crush asphyxia only.
- Eyes become red, shot.
- There is bleeding from ears and nose.
- Upper half of body is cyanosed and congested.

D) General Int. PM F -

✓ Bloody froth in Resp. passages.
✓ Lungs - congested and contain bloody froth.
✓ Tardieu spots on pleura, lungs, meninges and brain.
✓ Cranial and abdominal viscera is congested.

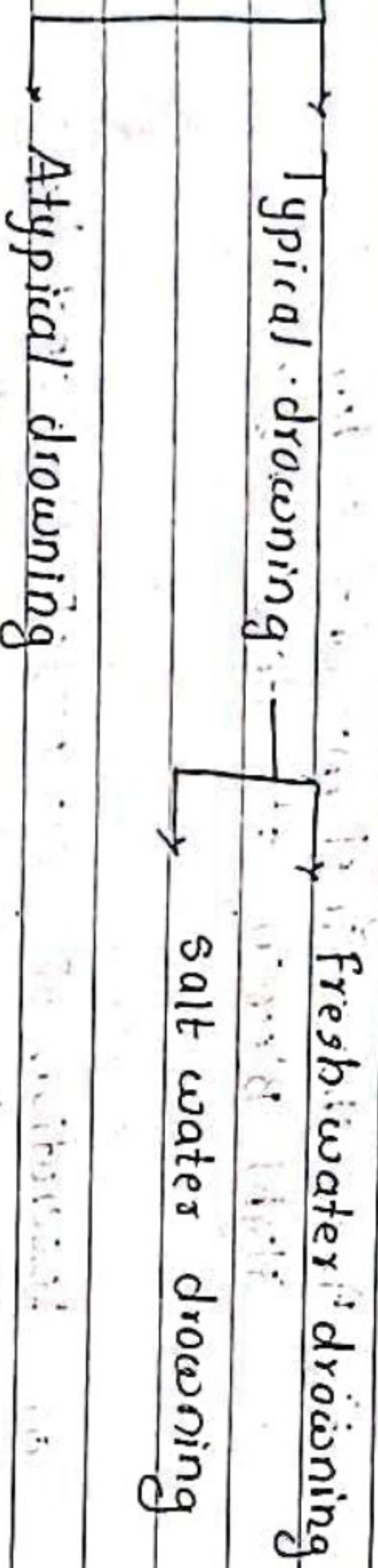
DROWNING

Defn -

mode of violent asphyxial death, in which the entry of air into lungs is prevented by presence of water or any other liq. fluid in lungs, and Resp. passage.

- Water having entered through nose and mouth

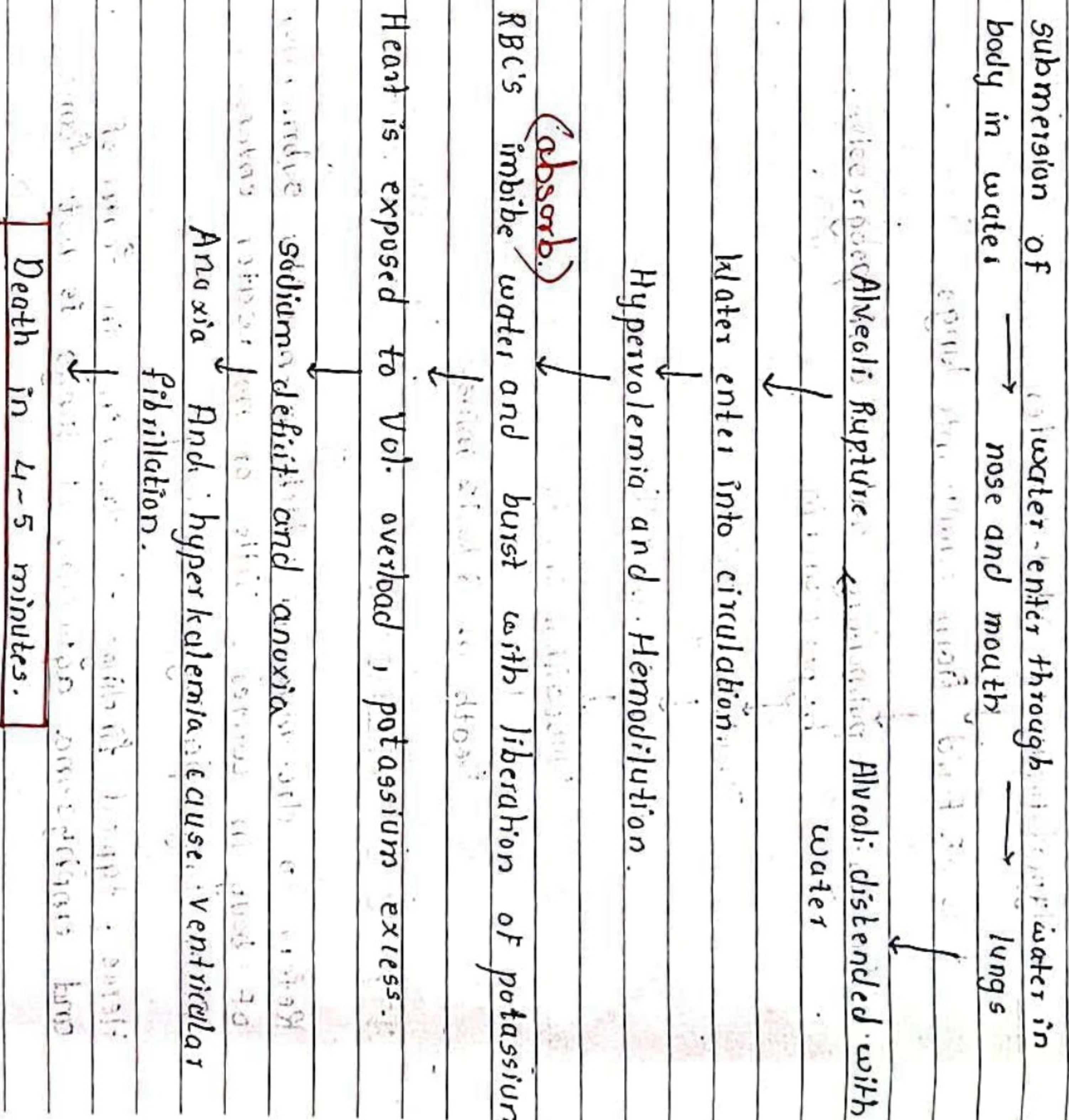
Types



A] Typical Drowning

- also called wet drowning, bcoz due to submersion, there is entry of water into Resp. passage and lungs.
- Findings of fluid and froth are present during PM Exam
- Pathophysiology in diff. in fresh water and salt water drowning.

A] Pathophysiology in fresh water drowning.



Pathology in salt water drowning

Hypertonicity of inhaled water

loss of fluid from circula into lungs

Fumigating pulmonary oedema with progressive hypovolaemia

Circulatory shock

cardiac stand still

Myocardial anoxia

Death in 8 to 12 mins.

B] ATYPICAL DROWNING

Refers to drowning in which even after submersion of body in water, little or no water enters respiratory passage and lungs.

Hence, typical findings of drowning in form of froth and emphysema aquosum of lungs is not found.

i) Dry drowning

On contact with water, especially cold water, intense laryngeal spasm results so that neither air nor water will enter the Resp. Tract

Death is due to asphyxia bcoz of laryngo spasm

ii) Immersion syndrome [Hydrocution, submersion drowning as cold water

→ Sudden death occurs due to vagal inhibition as a result of -

- sudden impact with cold water
- fear of water
- Duck diving (falling in water with feet first)

iii) Submersion of unconscious -

→ Person is in unconscious before submersion in water, little or no water enters respiratory passages

→ may occur in = myocardial infraction

Cerebrovascular accident

Hypertension

iv) Near drowning / Secondary drowning syndrome -

→ Survival and death occurs at a later stage, after removal of water.

either the person himself comes out of water, either recovered alive, but due to complication of submersion he dies at later stages.

→ death occurs due to combine effect of -

- cerebral hypoxia
- pulmonary edema
- aspiration
- pneumonia

POST MORTEM APPEARANCE -

- Better and more clear in typical drowning than atypical drowning.

- Appears better in fresh water body.

- An decomposed bodies and atypical drowning cause of death is established on basis of history

A] Ext. PMF

- Wet clothes, body, hair.

- Pale face → due to contraction of blood vessel.

- Eyes → Half open with dilated pupil.

- Cutis anserina [goose skin / goose flesh] → granular appearance of skin, with erect hairs due to contr'n of erector pill.

- white, fine, leathery, abundant and tenacious froth of nose and mouth.

- weeds, grass plants, mud or stones in tightly clenched hands ↓

due to cadaveric spasm

PM lividity → light pink, dusky and cyanotic

⇒ most marked in head, neck and

Chest.

B] Int. PMF :-

1) Changes in Resp. System -

✓ Presence of white, fine, leathery and tenacious froth in air passage.

✓ Subpleural hemorrhage on surface of lung, called petichial Hemorrhage.

- Emphysema aquosum i.e water logged, heavy voluminous lungs. found only in wet drowning.

2) Changes in GIT-

✓ Water in Stomach and intestine is diagnostic manifestation that the person was alive when drowned, because in postmortem drowning, water may be found in oesophagus but not beyond Cardiac sphincter.

✓ After putrefaction, since there occurs relaxation of Cardiac and pyloric sphincter, presence of water in Stomach and intestine has no significance.

3) Presence of diatoms.

✓ Diatoms in brain & bone marrow are also diagnostic and even more significant than presence of water in stomach and intestine especially in decomposed body as diatoms resist putrefaction.

✓ Diatom Test is -ve in dead bodies thrown in water and in dry drowning.

DIATOM TEST

10-20 gm of Bone marrow from sternum and femur

Boiled for 20-30 min in conc. Nitric acid

(fill clear soln obtained)

Nitric acid digest all organic matter but no effect on diatom

→ for acid dig. conc. sulphuric acid cannot be used,

it produces white precipitate with organic matter.

→ After boiling fluid is centrifuged and sediment is examined under the microscope for diatoms.

GETTLER'S TEST

Gettler's Test estimate chloride content of Blood from both side of heart.

Normally the chloride content is equal in left and Right Chamber of Heart.

In fresh water drowning due to hemodilution the chloride content is ↓

In salt water chloride content ↓ due to haemo-concentration in left side of Heart.

~ 25% diff. in chloride is significant

Test is: doubtful value.

Limitation - No Value in atypical drowning.

~ Progressive loss of chloride ion from blood after death.

MEDICO-LEGAL ASPECT

Most of cases of drowning are accidental but approx 1/3 is belong suicidal and homicidal drowning.

• Suicidal drowning.

~ indicated by absence of signs of struggle or assault (eg - torn clothes, injury marks)

~ A determined suicide may tie his hand and leg together or attach weights to his body or take poison or cut throat before immersion.

• Homicidal drowning

~ There are signs of Struggle and violence (assault)
eg - torn clothes, injury marks.

~ Head and feet may be tied, heavy wgt. may be attached to body may tied up inside a gunny bag.

~ Homicidal drowning is very rare except in infants & children.

• Accidental Drowning -

~ quite common and usually seen in children, non-swimmers during flood or due to fall in well

Injury

An Injury is any damage to

- **Definition** = any part of the body due to application of **Mechanical force**

Medically

Any discontinuity or breach in the continuity of body and when associated with loss of tissue.

~~IMF~~

IPC Section 44

known as **wound**

Legally

Any harm caused **illegally** to the person to his **mind, body, reputation or property**.

Classification

=

Injury

A/c to causative

Medical/legal

Injuries in

legal

Factor

classification

Reln to death

classification

↓

↓

↓

↓

↓

↓

↓

a) Mechanical

b) Thermal

c) Chemical

d) Miscellaneous

e) Fabricated

f) Suicidal

a) Suicidal

b) Homicidal

c) Accidental

d) Defense

e) Fabricated

f) Suicidal

a) Suicidal

b) Homicidal

c) Accidental

d) Defense

e) Fabricated

f) Suicidal

a) Suicidal

b) Homicidal

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e) Fabricated

f) Suicidal

a) Suicidal

b) Homicidal

c) Accidental

d) Defense

e) Fabricated

f) Suicidal

a) Suicidal

b) Homicidal

c) Accidental

d) Defense

e) Fabricated

f) Suicidal

A] Mechanical Injuries -

- 1) Blunt force injuries - Abrasion
contusion
laceration
- 2) Sharp edged injuries - Incised wound
chop wound
- 3) Piercing Injuries - Stab wound
- 4) firearm Injuries - firearm wound,

① Blunt Force Injuries -

Abrasion (Grazes, Scratches)

defn → defined as superficial injury on superficial layer of epithelium or on mucous membrane due to appln of mechanical Force (By skin rubbing against a rough surface)

Types

linear abrasion	pressure abrasion	imprint abrasion
-----------------	-------------------	------------------

1. Linear abrasion -

✓ scratch abrasion - sharp, narrow object → pin, thorn, pointed end

2. Graze abrasion -

✓ Sliding abrasion - gliding abrasion, brush Abr
Scrape abrasion
✓ wider at starter pt. and get narrower at end
- uneven, longitudinal, parallel line

3. Pressure abrasion -
✓ Crushing of superficial layer of skin.

4. Imprint abrasion.

✓ Motor tyre mark or radiating grill mark over skin in vehicular accident cases.

Medico-legal Importance

- i) Type of weapon / object used can be identified.
- ii) Time of assault can be determined.
- iii) can give idea about some type of offenses committed.

• CONTUSION -

defn - An extravasation or collectn of blood due to rupt of blood vessel caused by appln of mechanical force of Blunt nature without loss of continuity of tissue.

Types -

- ✓ Intradermal bruise
- ✓ Subcutaneous bruise
- ✓ Patterned contusion
- ✓ Deep bruise
- ✓ Tram-line contusion
- ✓ Six-penny bruises
- ✓ Contusions over organs
- ✓ Gravitating / shifting contusion.

Bruise :- (Ecchymosis)

✓ leakage of blood into underlying tissue from damaged blood vessel.

- A yellow - coloured bruise may be more than 18 hrs old.
- The colouring must not be taken from photographic image.

Medico-legal Importance :-

- 1) Offending weapon can be known.
- 2) The age of injury can be determined.
- 3) Character and manner of injury can be known.
- 4) Appr of degree of Violence can be estimate

LACERATION

S2

CAAT

Tear

Defn -

Laceration wound is form of mechanical injury caused by hard and Blunt force impact characterized by splitting / tearing of tissue.

- If is more common where skin can be compressed applied force and underlying bone.

Types -

✓ Split lacer^n - Incised looking lacer^n, caused

Blunt force, common sites includes scalp, face, shin et

✓ Stretch lacer^n - over stretching of Fixed skin th it ruptures

✓ Tear laceration - Tearing of skin and subcutaneous tissue

✓ Avulsion - due to grinding compression or tissue

✓ Crush laceration - Total or partial amputation of affected body parts

✓ Cut laceration - produced by heavy sharp edged instruments.

Medicolegal Imp.

- 1) Cause of injury can be known
- 2) Type of lacerated wound may be known
- 3) Nature of injury can be ascertained
- 4) Age of injury can be estimated
- 5) It may be confused with incised wound

2) Sharp edge injuries -

Incised wound

defn - It is form of mechanical injury characterised by orderly split of skin and tissues.

Features -

- ✓ Always broader than the edge of weapon.
- ✓ length of incised wound is greater than breadth.
- ✓ Slanting end of incised wound is deeper than end part.
- ✓ Haemorrhage is more.

Medical Imp.

- 1) Cause of injury can be known.
- 2) Age of injury can be estimated.
- 3) Nature of injury can be ascertained.
- 4) It can be known whether injury is accidental or suicidal.
- 5) It may be confused with lacerated wound.

Chop wound

defn - It is Type of incised wound made by hacking or chopping motion with a fairly sharp and relatively heavy weapon.

Features -

- produced by Relatively heavy sharp cutting weapons such as axe, chopper, sword.
- ✓ Wound are comparatively wider and deeper than incised wound.

Medical Importance -

- 1) Chop wounds are usually homicidal in nature.
- 2) from heel or toe end, the relatively position of assailant and Victim can be known.
- 3) The type of wound used can be known.
- 4) Age of injury can be known.

3) Piercing Wound.Stab Wound

- piercing wound produced by appln. of mechanical force along the lung axis of narrow or pointed object

Types -

- 1) Puncture wounds - depth is greater dimension and caused by a sharp pointed object

- 2) Penetrating wounds - when a sharp object penetrates into body.

eg - In thorax and abdomen

- 3) Perforating wounds when sharp tip of weapons perforates so as to cause wound

- 4) Concealed punctured wound

ML Imp.

- 1) Stab wound may be suicidal, homicidal or accidental
- 2) Type and dimension of weapon used can be known
- 3) Movement of knife in wound can be known.
- 4) Depth and dirn of Thrust can be known.
- 5) Age of wounds can be known.

Other types of Injury pattern.

1. Punching
2. Kicking and stamping
3. Bite injuries
4. Defence injuries
5. Self inflicted injury

Firearm - any instrument / device designed to propel a projectile by means of explosion of gases generated by a combustion of an explosive substance.

Ammunition - material used to cause the explosion. i.e. The ingredients used such as bullets, pellet, powders, etc.

Ballistics - science that deals with investigations of firearms, ammunition and the effects arising from their use.

• classification:-

Firearm	
To condn of hazard	A/c to <u>muzzle velocity</u>
Smooth bore firearm (shot gun)	↳ Low velocity
Rifled firearm	↳ Medium velocity
Country made firearm	↳ High velocity
Air gun	Eg - machine gun.
Paradox gun	

Structure -

Barrel - Hollow steel tube / cylinder / length varies a/c to type of gun
The lumen of tube or cylinder is known as bore

Grip / butt / stock

Action - It consists of Trigger, Trigger guard, Bolt, Striker or Hammer

• DIFF. Btwn. Entry and Exit Wound -

Entry Wound

Exit wound

1. Wound - smaller size
2. on flat bone (skull) wound is cut on outer surface and chipped inward
3. Edges are inverted
4. Abrasion collar is present
5. clotting may be turned in and carried into wound.

Outwardly split edges

Bevelled and everted

Edges - everted

Absent

May / May not be turned out

• Test Used in Firearm discharge -

1. Based on detection of heavy metal.
2. Horrison and Gilroy Test.

PREGNANCY, DELIVERY AND ABORTION

PREGNANCY

Intro:-

Physiological state in female where she conceives and carries developing product of conception in her womb until Birth of a child.

Medical Legal Importance -

A] Civil Cases:-

1. Nullity of marriages -

IF a female is pregnant before marriage from another person and she concealed (hid) the pregnancy at the time of marriage with other man to whom she get married then the marriage can be declared as null/void

2. Divorce

Pregnancy resulted in female who had no access to her husband within reasonable period matching with the duration of pregnancy then the decree of divorce may be allowed to husband.

3. In case of Breach of promise of marriage

In alimony -

In divorce, cases pregnant women are allowed higher maintainance allowance

5. Inheritance of property

6. Blackmailing

7. Defamation

Pregnancy may be taken as a plea to avoid court.

B] Criminal Cases -

1. Pregnancy is a true proof of sexual intercourse in rape

a. Pregnancy may be cause for suicide in unmarried females

3. Pregnancy may be motive for murder if that pregnancy is due to -

Sexual intercourse by men with women. Murder may be done by husband when husband is a suspect that wife is pregnant by another person.

4. Execution of death sentence - under sec. 416 of CrP

5. Pregnancy related with Criminal abortion / concealment of Birth

DELIVERY

Defn -

Delivery is expulsion / extracn of viable fetus out of womb at Term.

Medicolegal Importance -

A] Civil Cases

1) Pretended delivery and suppositious child

2) Affiliation and adoption

3) Concealment of Birth

4) Contested paternity

5) Legitimacy of Child

6) Nullity of marriage up to 6 months after delivery

7) Divorce

8) Inheritance of property

9) Higher compensation in homicide and suicide

compensation cases

INFANTICIDE

Defn

Infanticide refers to killing a child after delivery to till 1 yr. after birth.

Medicolegal Importance -

- Infanticide in India is considered equivalent to murder and is tried under section 302 IPC.

- Law considers every child as born dead and therefore in a case of infanticide, it has to be proved that the child was born alive and was then killed.

- Investigation of a case of infanticide whether the child was still born or dead born or whether it was born alive.

BATTERED BABY SYNDROME

Defn -

Also called → Caffey's syndrome, child abuse syndrome, maltreatment syndrome, non-accidental injury of childhood.

Definition → A battered baby child is one that suffers repetitive physical injuries inflicted by parent or guardian which are non-accidental in nature

• Features

- 1) Age → less than 12 yrs. or 13 yrs.
 - 2) Seen slightly more in male sexes
 - 3) There is general condⁿ of neglect in child.
 - 4) Occurance of injury at diff. Times.
 - 5) There may be history of multiple admission to hospital
 - 6) History given by parents are incompatible with clinical findings.
- Medico-legal Importance -
- 1) In India incidence of Battered baby syndrome is less.
 - 2) If death of child secured a charge of homicide may be labeled against offending parent.

• Define and Classify abortion, MTP Act, PC PNDT Act.

ABORTION

Defn -

Expulsion of product of conception (embryo/fetus) before it can survive outside the uterus is termed as abortion.

Types

Natural Abortion (Spontaneous / accidental)

Artificial Abortion

Occurs naturally or spontaneously without any intervention. Occurs as result of direct interference with pregnancy.

* Criminal Abortion

- Sec 312 - 316 of IPC deal with criminal abortion.

→ legal abortion - comes under MTP Act.

- cases of criminal abortion found in -

→ Widows who prevented from re-marriage by social customs

Methods of criminal Abortion

1) Drugs → Ecobolics

emmenogogues. which go into stomach and induce abortion.

2) Abortion stick - by inducing uterine contract

- It may be thin wooden/bamboo stick / a twig from irritant plant → कजूर, तिक, आल तिक

[MTP] Act.

Intro

India was the one of the 1st countries which legalized abortion through Medical Termination of pregnancy Act of 1971

Also to this Act → All women can legally have an abortion if it's pregnancy carries the risk of grave physical injury or endangers her mental health, if it is a result of contraceptive failure in a married woman, if is a consequence of rape or if it is likely to result in the birth of a child with physical or mental abnormalities. In such circumstances abortion is permitted up to 20 weeks of pregnancy without any need for spouse consent.

MTP Amendment Bill 2020 -

- Now there is amendment in MTP Bill in March 2020 of Ministry of Health and Family Welfare.

- The Bill ↑ the time period of abortion.

a) Abortion to be done on advice of one doctor up to 20 weeks -

b) Abortion to be done b/w 20 to 24 weeks on the advice of 2 docs in case of certain categories of women.

c) Pregnancy may be Terminated after 24 weeks in case of substantial foetal abnormalities decided by state level medical board.

• An attempt to provide safeguard against indiscriminate abortion was made in medical Termination of pregnancy act in India. in 1971 and has been enforced in April 1975.

• The provision of act has been revised in 1975.

• The condn under which pregnancy can be Terminated under MTP Act 1971 are as follow -

1. Medical - Where continuation of pregnancy might endanger the mother's life / cause grave injury to her physical or mental health.

2. Eugenic - Where there is substantial risk of child being born with serious handicapped due to physical / mental abnormalities.

3. Humanitarian - Where pregnancy is a result of rape, both in major and minor girl and in mentally imbalanced women.

4. Socio-economic - Where actual / reasonably foreseeable environments could lead to risk injury to health of mother.

5. Failure of contraceptive devices -

The mental suffering caused by an unwanted pregnancy results from failure of any contraceptive device or method can be presumed to constitute a grave injury to mental health of mother.

Recommendation

1. person who can perform abortion should be a medical practitioner having experience in gynaecology and obstetrics.

- has assisted in at least 25 MTP.

2. at hospital (No other places)

- place approved for purpose of this act by gov.

- Non-gov. institutions can also take up abortion provided they obtain a license from chief medical officer of district.

- Termination is permitted upto 24 weeks of pregnancy, when pregnancy exceeds 20 weeks, opinion of 2 medical practitioners is required.

- pregnancy can only be terminated on written consent of woman.

TECHNIQUES (PCPNDT)

* Introduction -

- Sex ratio - Indicator which describe the No. of females per 1000 men for a given population.

- Child sex ratio - ratio of girls to boys in age group of 0-6 yrs.

- Sex ratio of a given population also used as a strong indicator to ascertain social health.

- Adverse sex ratio indicate poor social health and barrier in attaining sustainable social development.

- Misuse of technology is a major reason for distorting child sex ratios.

- In order to regulate use and prohibit misuse of technology, the PCPNDT act enacted in 1994 and amended in 2003 in an imp. tool for addressing sex selective eliminations.

* Purpose

To prohibit and regulate the use of diagnostic techniques before or after conception of sex determinations leading to sex selective elimination of fetus.

- PCPNDT act, 1994, an act of parliament of India, enacted to stop female foeticides and arrest, the declining sex ratio of India.

Objectives -

Main purpose of enacting the act is to ban the use of sex select techniques before or after conception and prevent the misuse of prenatal diagnostic technique for sex selective abortion.

Salient features of PCPNDT

1) The Act provides for prohibition of sex selection before or after conception.

2) It regulates use of pre-natal diagnostic techniques like ultrasound machine by allowing them their use only to detect -

- Genetic abnormalities
- Metabolic disorders
- Chromosomal abnormalities
- Certain congenital malformations
- sex-linked disorders

• Describe Surrogacy (Regulation) Act 2021 and the assisted Reproductive Technology (Regulation) Act 2021

SEXUAL OFFENCES

Describe classification of sexual offences.

Defn -

Unlawful sexual intercourse with a second person or animal to obtain sexual pleasure (gratification)

Natural sexual offences

Unnatural sexual offences

Sexual perversions - Acts intended to Result in sexual gratification without sexual intercourse.

• Define rape

Describe examⁿ of rape victim and accused and its medico-legal aspects?

Defination -

Acc to section 375 IPC, a man is said to commit rape, if he has sexual intercourse with a woman -

1) Against her will.

2) Without her consent

3) With her consent if she is -

i) less than 16 yr. of age

ii) With his own wife less than 15y

iii) Intoxicated or unsound mind

iv) Impersonation.

• Examⁿ in case of Rape -

A] Examination of Victim -

Victim can't be examined without written informed consent.

Victim should be examined by or under supervision of female RMP (Sec. 53 (2) CrPC)

Findings which are suggestive of Rape are -

i) Signs of struggle on cloths, body and genitals.

ii) presence of semen in vagina.

iii) presence of spermatozoa in vagina.

iv) presence of smegma beilli in vagina is suggestive of coitus.

v) Locards principle of exchange

Exam of accused -

An accused can be examined even without his consent finding may be -

i) presence of firm Torn Frenulum is consistent with a recent intercourse.

ii) presence of smegma under prepuce

iii) presence of vaginal epithelial cells on penis → detected by lugol's iodine

- Law Related to Rape -

1) IPC sec. 375

2) IPC sec. 376

Medicolegal aspect of Rape

Sexual intercourse by a man with his wife even against her will is not rape, if she is above 15 yrs of age.

Statutory Rape - rape by person who are in position of authority

eg - police officer, hospital staff, jail wardens and who abuse their position to commit intentions, each is deemed to have committed gang rape.

Group Rape - when raped by 4 or more in group of person acting in furtherance of common intentions, each is deemed to have committed gang rape.

Drugged Rape - Sexual intercourse with women who is given a drink containing a sedative drug.

Statutory Rape -

• Define unnatural sexual offences and sexual perversion with their medicolegal aspects and give introduction to PoCSO Act.

Describe symptoms commonly associated with psychiatric disorders and significance of lucid interval. (DK)

→ F.P is subsequently of psychiatry and is related to criminality. It encompasses the interface b/w law and psychiatry.

Areas of forensic psychiatry include → conflict with criminal laws, marriage issues, sexual abuse, eligibility to work, Testamentary capacity, ethical issues.

1. Anxiety disorder
2. Mood disorder
3. Psychotic disorders
4. Dementia
5. Eating disorder.
6. Insanity

Lucid interval is a period of sanity (sound mind) in an insane person

i.e. period in course of mental illness when there is complete cessation of manifestation of insanity.

- During this period, he quite normal and can make valid will give valid evidence and is legally responsible for his deeds.

- Before making a diagnosis of insanity, patient may be kept under observation in mental hospital or general hospital / nursing home

- patient is kept under observ for 10 days, which extended upto maximum 30 days.

- 2 dr. should examine patient separately without consulting each other at least 3 examinations.

Describe civil and criminal responsibilities of mentally ill person. (DK)

Describe mental Health Act (MHA)

(NK)

- The mental Health Act is a law tells people with a mental health disorder what their rights are and how they can be treated.

- Term mental health disorder used to discover people who have -

- A mental illness.
- A learning disability
- A personality disorder.

- It's imp. that person know what happens when he detained what are rights, and where to seek help

• Mental Healthcare Act 2017.

- In India act was passed on 7 April 2017 and came into force from 29 May 2018.

- The act effectively decriminalised attempted suicide which was punishable under sec. 309 of IPC.

* विशुद्ध आहार

• Defⁿ -

- The foods, drinks or drugs which aggravates दोष but do not expel them out of the body is called विशुद्ध आहार.

• Types -

देश	संस्कार S	परिहार P	हृदयविशुद्ध H.
काल	वीर्य V	उपचर U	संपन्न S
अग्नि	कोष्ठ K	पाक P.	विधी V
मात्रा	अवस्था A	संयोग S	
सात्व्य	क्रम K.		
दोष			

1) देश -

- जांगल देश - ~~विष~~ ^{तृष्ण} & रुक्ष Substance. वात ↑
- अनुप देश - शीत & स्निग्ध Substance. कफ ↑

2) काल -

- Winter Season - शीत & रुक्ष food.
- Summer Season - कटु & उष्ण food.

3) अग्नि -

- गुरु आहार - मन्दोष्ण.
- लघु आहार - तिक्तोष्ण.

4) मात्रा -

- Taking of मधु & घी in equal quantity.

5) साम्य - use of
- ~~मधुर~~ मधुर, शीत food for a person.
- Contradictory - कटु, उष्ण food.

6) दोष -
- Use of diet, drug & behaviours similar to दोष in properties.
but adverse of the person practice is antagonistic to दोष.

7) संस्कार -
- Drugs & diet when prepared in particular produce poisoning effects.
ex like Case शिकरी मांस attached to Castor stick (peacock Meat)

8) वीर्य -
- शीत वीर्य + उष्ण वीर्य combined together are taken.
ex fish with milk

9) कोष्ठ -
Administration -
→ mild purgative - कुर कोष्ठ (hard bowel)
→ strong purgative - मृदु कोष्ठ (soft bowel)

10) अवस्था -
Vata vitiating substance - श्रम, व्यायाम, व्याय
Kapha vitiating substance - निद्रा, आलस्य

11) क्रम -

person takes food —
 → before his bowel
 → Urinary bladder empty.
 → ~~Does~~ not have appetite.
 → his hunger has highly aggravated after

12) परिहार -

- Eating hot things after intake of कुराह मांस.

13) उपचर -

- Eating cold things after intake of घी.

14) पाक -

- preparation of food with bad or rotten food under cooling.

15) संयोग

- Caused by combination of 2 or more substance.

ex आम्ल आहार with milk.

16) हृदयविषाद -

- Any substance which is Not Pleasant in taste

17) संपत -

Food ^{sub.} which are Not matured or over Matured

18) विधी -

- Rules of diet not following.

Taking meals —
 → unhygienic place
 → while talking
 → laughing

* incompatible food.

* माष, मधु, क्षीर, गुड $\rightarrow$ Meat of Marshy land is incompatible.

* fish meat $\rightarrow$ milk is incompatible.

* आम्ल $\rightarrow$ Milk is incompatible.

* Milk + wine should not be taken together.

* मधु, घी, fat, oil, water used in equal proportion.

* Disease -

- blindness - आन्ध्र

- विपरी

- कुष्ठ

- पाण्डू

- गण्डी

- आम्लपित्त

- ज्वर

incompatible food does not affect on.

* Treatment -

- वमन

- विरेचन

- Antidotes.

- शमन

* Prevent

$\rightarrow$ own points.

$\rightarrow$ regular व्यायाम

$\rightarrow$ स्निग्ध आहार.

$\rightarrow$ digestive power.

$\rightarrow$ good physical & mental health

चिकित्सा।

- 1) ज्वर - क्वाथ of राजवृक्ष त मधु & Sugar
- 2) कास - कटुकी + सितोफल त Rice water.
- 3) टिक्का - Powder of शैख
- 4) श्वास - सैन्धव क्वाथ त मधु & Sugar
- 5) छर्दी - बिल्वमुल क्वाथ त मरीच powder.
- 6) मूर्च्छा -
- 7) वृष्णा - } Applying हिम लेप of बूदन, उशीर त क्षीर, घृत
Sugar
- 8) अतिसार - धातकी with rice water
- 9) विवन्ध - त्रिफला त warm water.
- 10) अनाट - क्वाथ of त्रिफला
- 11) बस्तिशूल
- 12) शिरशूल
- 13) शवथु
- 14) पुतिगंध
- 15) रक्तस्राव
- 16) विषवाल - घी with पिप्पली.

* food poisoning and आमविष

① food poisoning —

• Defⁿ —

— Consumption of food, which is Contaminated by bacteria & is stored or cooked incorrectly.

• Most common type of bacteria are —

Staphylococci

Salmonellae

— Multiply in food & produce a poisonous substance (toxin).

— Multiply in bowel & cause dysentery.

— it spread through poor personal & kitchen hygiene.

• Sign & symptoms —

Staphylococci

Salmonellae

• Nausea, Vomiting, diarrhoea, Abdominal pain

• Nausea, Vomiting, diarrhoea, Abdominal pain, fever

• Treatment —

— Vomiting (वमन)

— विरेंचन

• — Gastric lavage

— Use of antibiotics.

• Post mortem appearance -

- inflammation of mucosa of GIT,
- Congestion of organs.

* Food Safety and Standard Authority of India (FSSAI)

established.

↓ food safety & standards Act, 2006.

* आमविष -

आमदोष of an individual habited विरुद्ध
आहार, अद्वयशन, अजीर्णन
consider as आमविष.

• Sign & Symptom -

- मूच्छा

- अङ्गमर्द

- जृम्भा

- अरुचि

- छर्दी

भ्रम

- ज्वर

- तृष्णा

• Disorder -

- oral disease

- पित्तज विकार

- प्रमेह (उन्मथ)

- मुत्र रोग

• Management - बमन, विरचन, लघन

*. Poisons of Plant origin *

Name	B.N	Family	V.N	पर्याय
1) <u>वसनाम</u>	Aconitum	Ranunculaceae	H - मित विष	अमृता
	Ferox		E - Monk's head	गारु
				विष
2) <u>केशीर</u>	Nerium	Apocynaceae	H - कनेर	अश्वमारु
	Odorum		E - oleander	अश्वमारु
				केशीर
3) <u>Tobacco</u>	Nicotiana	Solanaceae	H - तंबाकू	ताम्रपुष्प
	Tobacum		E - Tobacco	
4) <u>Cerbera</u>	Cerbera	Apocynaceae	-	-
	odallam			
5) <u>Digitalis</u>	Digitalis	Scrophulariaceae	-	सितपुष्पी
	purpurea			
6) <u>कुपितु</u>	Strychnos	Loganiaceae	H - कुचल	तिन्दुक
	Nuxvomica		E - Poison nut	काकतिन्दुक
			tree	विष तिन्दुक
7) <u>आदिफन</u>	Papavera	Papaveraceae	H - अफीम	तिलमैद
	Somniferum		E - Opium	असतिल
				असफलशीर

Toxic part	Action	F.D	F.P
Roots.	Cardiac	1-2 gm of Root	2-6 Hr.
Roots.	Cardiac	15-20 gm of Root.	24 Hr.
leaves.	Cardiac	15-30 gm (Tobacco)	5-15 min.
fruit	Cardiac	kernel of 1 fruit	1-2 days
leaves	Cardiac	15-30 mg (Digitalin)	6-24 hr.
Seed & bark	Neurotoxic	1-2 crushed Seeds.	1-2 Hr.
Latex	Neurotoxic	Opium - 2 gm	6-12 Hr.
		Morphine - 0.2 gm	

Name	B.N	Family	V.N	पर्याय
8) धातुर	Datura metel	Solanaceae	H- धातुरा	- किनवा or E- Thom Datura Stramonium apple मदन
9) भाङ्ग	Cannabis Sativa	Cannabaceae	H- भाङ्ग E- Indian hemp.	बूटी भूंगा मदिनी
10) जाम्बाल	Croton figlium	Euphorbiaceae	H- जाम्बाल E- Purging Croton	रत्निबीज रत्निदानी
11) गुज्जा	Abnus precatorius	Fabaceae/ leguminose	H- गुज्जा E- Indian liquorice	रक्तिका रक्ता ताम्रिका शीतपत्रिका
12) अमलाक	Semicarpus ganacardium	Anacardiaceae	H- अमला E- Marking nut	अमिगुडी भरती विरवृक्ष
13) अर्क	Calotropis praceea	Asclepiadaceae	H- अर्क E- Madar	सूर्यक्षीर अर्कपर्ण क्षरपर्ण
14) रज्जुटी	Euphorbia Nerifolia	Euphorbiaceae	H- रेहण्ड E- Milk hedge	रज्जुटी दुध सुधा दुध सुधा क्षीर
5) लज्जली	Gloriosa Superba	Liliaceae	H- Karihar E- Malabar glory lily	आनिजिद आनिजिद

Toxic part	Action	F.D	F.P
Seed & Flowers	Neurotoxic	100-125 Seeds	2 Hr.
Leaves	Neurotoxic	चार - 2 gm गुज्जा - 8 gm भाङ्ग - 10 gm	12 Hr.
Seed	Irritant	1-4 Seeds. (Crushed)	4-6 Hr
Seed	Irritant	1-2 Seed (Crushed)	3-5 day
Seed. (Nut)	Irritant	5-8 Seed.	12-24 Hr.
Root	Irritant	uncertain	30 min
Latex of Stem & Leaves.	Irritant.	Teaspoonful of juice (25-30 ml)	3-5 day
Root (Rhizome/tuber)	Irritant.	Powder - 2-5 gm	12-72 Hr.

format

* स्थायी विष - Cardiac
Neurotoxic
Irritant.

• Type of poison

• B.N

• Family

• Vernacular Name - Hindi - लाल अश्विनी

English -

• पर्याय / Synonyms -

• Toxic part

• Habit - Tree / Shrub / herb @ feature.

• Habitat - all over India, South India
North India.

• रस पंचक - रस - कड़ु, तिक्त
गुण - लघु, रक्ष
विर्य - उष्ण
विपाक - कड़ु

out
except दसनाभ
मधुर
रस.
⑤
भल्लतिक
मधुर विपाक

• Toxic chemical constituent -

• Action - C / N / Iri.

• Sign & Symptoms -

• Fatal Dose -

• Fatal period -

• Management / Treatment -

• Post mortem Appearance -

• Medico legal - Importance -

• औषध योग -

• Therapeutic Dose - Maximum (60-125 mg)

Format

• श्चावर विष - mettalic

• Nomenclature

- संस्कृत -
- हिंदी -
- English -

• Type of poison -

- Irritant mettalic poison.
(श्चावर धातु विष)

• Toxic Compound -

oxides, sulphide, chloride.

• Mode of Action -

Common

- Causes Irritation to mucus membrane of GIT.
- Causes Inflammation to mucus membrane of GIT.

• Fatal dose -

• Fatal period -

• Sign & Symptoms -

• chronic toxicity -

- loss of Appetite.
- Anemia.
- Renal tubular damage.
- Facial pallor.
- colic pain.
- Constipation.

• Treatment -

• PMA -

• MLI -

Format

• कृत्रिम विष - for all.

• chemical Name -

• chemical formula -

• Action -

• Sign & Symptoms -

• properties असतील तर.

• Source / Use असेल तर.

• Fatal Dose -

• Fatal period -

• Management -

• PMA -

• MLI -

Common Point

• Sign & Symptoms —

- Nausea
- Vomitting
- Diarrhoea
- Salivation.
- Abdominal pain
- Difficulty in breathing.
- Weakness.
- Burning sensation.
- Dizziness.
- Thirst.
- Cramp in abdomen
- Tremors.
- Vertigo
- Coma
- Blurred vision
- Shock
- Hypertension.

• Management —

- Stomach wash
- Gastric leavage.
- Atropine
- Activated charcoal.
- Antidote
- Demulcents like milk, butter
- Chelating agent (BAL)
- Symptomatic Symptom

- Hemodialysis
- Purgatives
- emesis

• Post mortem appearance. -

- Corrosion of GIT mucosa
- inflammation in mucous membrane of Stomach or GIT.
- Congestion of various organs
- Signs of GIT irritation
- Sign of Asphyxia.
- Hemorrhage in ----- organs.
- Eyeball sunken
- Skin cyanosed.

• Medico legal importance. -

- Accidental poisoning .
- Suicidal ————
- Homicidal ————
- Cattle. ————